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ORIGINAL COMMUNICATIONS.

New-Year's Thoughts—Future State of America. By the Editor.

When a traveller arrives at a resting-place in his mountainous journey, he casts his eye over the extended prospect, and involuntarily gives himself up to the reflections arising from the scenery. So with us all, when we, in our journey of life, reach that point where one year terminates and another commences—varied, momentous, and soul-absorbing thoughts rush on, and overwhelm us. Thou, Time past! wonderful in vision! Thou, Future! what hast thou in store for us? Thou, New World! why wast thou so long hid far away between the wide oceans? Why wast thou found? Why hast thou been inviting to thy shores those of every nation and tribe in the Old World? Why dost thou still invite them? Dost thou design to exhibit the blessed fruits of Liberty as long as time shall endure? Or art thou a mere nursery—the garden of experiment?

When reflecting on the discovery of America, and on the transactions that have since occurred in both hemispheres, the inquiry, what does Providence design to do with America, is momentous—all-absorbing. Is this continent destined to take the lead in all that elevates mankind? Is it designed to become the abode of real civil and religious liberty, with all her attendant blessings? Or does our Creator here intend to make further developements of the character of man, with a view of consummating wise and grand plans of benevolence first in the Old World? Do the records of history make such a supposition anomalous? Have we, in reality, any authority to conclude that the East is to have its clouds dispelled by uninterrupted beams of light from the West? Alas! we confess we have none. In Spanish America there is as yet nothing decisively favorable. Let but a cloud rest over our own country, and darkness will overshadow the whole continent.

At the time of the discovery of America, during our colonial existence, and for some thirty years after acquiring our independence, the state of Europe and the condition of this country were such, that comparatively none but of that class who had protested against civil and religious corruptions, aggressions, and tyranny, had sufficient inducements to forsake their own land, and encounter all the trials attending the subjugation of a country of forests. They were mostly farmers, mechanics, and traders—those who regarded laws that secured the acquisition and enjoyment of property, and all those civil and religious rights that the God of Creation designed for the happiness of his creatures, as the primary object of rational beings. They were choice spirits, wholesome and valuable members of society, the bone and sinew of a state. They were, in fine, those who knew they had to labor and persevere in subduing the wilds of nature. More recently, particularly since the battle of Waterloo, the circumstances bearing on this subject, both in Europe and this country, have materially changed. The termination of the long wars which had demoralized millions, set loose hundreds of thousands whose views and pursuits rendered them unsuitable members of an industrious agricultural community. At this time our countrymen had subdued immense portions of our native wilds, had greatly augmented their comforts, their trade, and their wealth, and had begun to increase their manufactures, and to enter spiritedly into plans of extensive internal improvements. These circumstances rendered it far more easy for emigrants of a different class to obtain a livelihood. The establishment of regular lines of packets between this country and European ports, and the other increased facilities for cheap and expeditious emigration, have brought, and still are bringing, to our shores, those who are mostly of a different class from former emigrants. In numbers, they nearly equal the births of native citizens.

In proportion as the condition of Europe becomes ameliorated, the less inducement will exist for worthy industrious members of community, particularly those possessing property, to emigrate to this country. The continued peace, and the general prosperity existing in Europe, have removed much of the discontent among the industrious and business part of the inhabitants. The enlightened advocates of religious and civil freedom will prefer to remain at home, and use their influence for their country's emancipation, rather than expatriate themselves.

In all the populous parts of Asia the protestant religion, the useful arts, and trade and commerce, are making very important progress, affording inducements to men of capital, of enterprise, and of education, to seek for wealth and usefulness—but none to those of a different class. The internal improvements that will probably soon be commenced, to increase the trade through the Mediterranean to Southern India, will not call from Europe any but those of the former class. Asia already abounds in countless numbers of the poor and the destitute. Australasia likewise offers but comparatively slight inducements to those who possess very little or no property.

Throughout the uncivilized world, including all Asia, the Protestant religion is making advances, and is carrying with it agriculture, commerce, and the arts. In those European countries with which the United States sustains the greatest intercourse, the principles of civil and religious freedom are making a progress that is, to their opposers, fearful. In France, for instance, those who have ever, especially as a sect, manifested opposition to these liberal principles, have lost their paramount influence; and since the dethronement of the Bourbons, have sustained a great diminution in the number of their leaders and pupils. In England and Scotland, this class is increasing, principally by the emigration of an unenlightened portion of the population from Ireland, wrongfully prejudiced and controlled. In the United States, this is emphatically the case by an emigration from all Europe. Thus is presented the singular spectacle of the relative increase, throughout the world, of those who support the principles of true civil and religious liberty, except in two of the most free and enlightened nations of the globe. For the poorer classes in Europe, the United States offers almost the only asylum in the world. They are principally the only ones employed in making our roads and canals, and in performing the most burdensome labor in building our towns and cities. In factories and on farms they do the coarser work. In the middle States, particularly in cities, the females comprise a great part of our domestics. Most of the males are employed in works that are discontinued in winter—a circumstance by no means calculated to improve their morals, nor to make them contented with our country, nor, consequently, to increase their admiration of our institutions. The emigration of this class will probably increase,—owing in part to a union of effort and means, by Protestants in Great Britain and the U. States, to extend their plans of benevolence, and to promulgate their doctrines—and, in part, to the progress of liberal principles, to arrest which many of these foreigners are urged by their interests and by their connections.

In 1775 there were but five of this sect of foreigners in the city of Boston, and now, in that and four or five other of the largest of our cities, they form nearly the *fourth* part of the inhabitants; and in the country at large, particularly in villages along the routes of public works, they number a large and increasing per centage of the population. As long as peace continues in Europe, it will be the policy and the gain of European powers to favor the emigration of the poorer and the troublesome classes; and as there as yet exists among us no general political prejudice against them, we may expect our shores to be annually flooded with them and their spiritual leaders.

The question now arises,—in what respect is this class of foreign emigrants injurious to farmers, to whose special interest our paper is devoted? In many and various ways. The feelings and the pursuits of these emigrants prevent them from coalescing and becoming one with our native population. They mostly congregate in our towns and cities, where they exert a great political influence. Being unacquainted with the peculiar wants of the farmer, and their views and habits being foreign to his, this influence will progressively counteract that of our agricultural population. This cannot fail, in time, to excite sectional jealousies, to render separate the interests of

the country and the cities. This state of things will inevitably injure the prosperity of both, and consequently the country at large. If the foreigners who now annually come among us nearly equal the number of the births among native citizens, it is positively evident, that if this emigration continues for a few years longer, the increase of foreigners, by annual arrivals and by births from the foreign population already in the country, will continue in a frightful ratio to exceed that from native Protestant Americans.

We deplore the existence of slavery among us as a dire national calamity; and yet only 300,000 were imported in *one hundred and fifty years*. In *four years*, there came to the United States more than three hundred thousand persons, whose civil and religious views are not, to say the least, in consonance with those who subdued the wilds of the country, and achieved its independence.

It was undoubtedly an implied condition in offering our country as the home and asylum to inhabitants of all other lands, that they should abandon their partialities for all those institutions, both civil and religious, that are hostile to the perfect and free enjoyment of those of our own country. Especially was it implied that they should relinquish former national characteristics in becoming an integral part of our nation, and, above all, to abjure every kind of allegiance to foreign powers. If they fail or refuse to do these, they as much violate the principles of true liberty and generous hospitality as does the distressed traveller, who, after being fed, clothed, and offered a home for life, seeks to excite separate interests in the family of his kind host, and to dispossess him of his property. Already there is a strong and increasing antipathy among this class, towards those who now can both enjoy comfortable firesides, and sit under their own vine and fig tree. Unless a kind Providence interpose, the day will come when the farmers of this now quiet and happy land will tremble for the inheritance of their fathers—when their wives and their children will grow pale for fear. Charge us not with illiberal and unpatriotic feelings when we use such language. Is it a trifle, a very small matter, to have nearly a *quarter of a million* of foreigners annually to find their way among us? Many worthy, and many true born sons of liberty, there doubtless are among them; but the circumstances which now induce the great body of them to emigrate to this country are different from those heretofore existing. Our forefathers either abandoned or fled their trans-Atlantic homes for the sake of civil and religious liberty. Now, the principles for which they in vain contended are, after causing many violent struggles, making a silent progress, that will yet cause millions, who now, from interest, education, and religion, oppose these principles, to look abroad over the face of the earth for a more congenial home.

A voice seems to come from the fields and the vales of our wide-spread country, crying, What are we farmers to do? We answer, A fearful responsibility rests upon you. To propose legal restrictions to remedy the evil is dangerous. To fail in other resorts, will make that to these restrictions too late. Therefore, farmers, to the great undertaking with the spirit of success or death!

There are two methods of converting the apprehended evils into blessings. Unsparing efforts and liberal sacrifices must be made by farmers to multiply and render more efficient the means to enlighten, and to cause to be more virtuous, the whole mass of our population. The onset must be made; the longer it is delayed the more violent and protracted will be the mental and perhaps the bloody struggle. Our fathers abandoned their crops, their lands, their homes, and risked life itself, in defence of their heaven-granted rights; and shall their sons hesitate to devote a tythe of their rich crops, and a small portion of their time, in perpetuating the enjoyment of these rights? At all times, and in all situations, inactivity and lethargy are incompatible with safety of law and liberty. Providence now emphatically reiterates, action, action! The dissemination of truth in its broadest sense, and the exhibition of good will to all whose footsteps mark our soil, are the pressing and binding injunctions of heaven on those who possess this land of promise.

Another method of averting the dreaded evil is to augment the productiveness of our soil, and to increase the attractions of rural life. The portion of land that now barely sustains one family, must be made to supply the wants of ten families. The chief fountain of our prosperity, and the grand resource of our wealth, must forever exist in our soil. In our fields must be found a preponderance of capital, skill, science, talents, and influence. Industry and taste must subdue and beautify nature. Our agriculture must present increasing inducements and encouragements to those of all classes. The assimilation of our heterogeneous population can be accomplished only in the occupations of the field.

Farmers of the present generation! On you depends the happiness of a vast portion of the living, and of unborn millions. Liberty will look to you in the last resort. On you and your actions rests all hope of sustaining the nation in the reverses and shocks it may be destined to experience. When trade, commerce, manufactures, and internal improvement, shall suddenly dismiss their thousands and ten thousands, then on the moral tone of your character, and on your physical resources, will depend the nature, extent and duration of the calamity!

Pleasures and Profits of Ornamental and Forest Trees. By H. H. [For the New-York Farmer and American Gardener's Magazine.]

MR. EDITOR,—I have read Mr. Sayres' communication upon "Ornamental and Forest Trees," in your last number, with some special interest; and as men are seldom excited to the performance of duty or to regard their best interest, especially if their best interest requires *exertion*, and this in a different way from that which habit has fixed upon them, without "line upon line," I have thought it not unimportant to call the attention of your readers again to this subject. It is with pain that I state the fact, which is already familiar to every person of observation, that nothing is more common than to witness in our country well cultivated farms and good buildings, with numerous flocks and herds cropping the luxuriant herbage of the pastures and fields, without seeing a single tree upon the premises planted for ornament, nor one preserved from the feller's axe because it was beautiful, or because it would prove a comfort to those flocks and herds in the intense heat of summer; but all of the forest is swept away, except what is reserved for fuel, as with the besom of destruction; and such an exhibition never fails to impress my mind with the fact that the owners and occupants of such habitations are persons of no taste, and that their only object in this world is to subsist upon the coarsest fare, and to hoard treasures. This state of things has arrested the attention of foreigners, and in *this* particular they have meted to us according to our demerit. In general, nothing would be easier than for those who are about to fell a portion of their forest trees, to make a selection of young and thrifty trees where they would have them stand for ages, and answer the purposes alluded to; and where they begin anew to remove the forest for a building lot, they may preserve trees which will serve very well for ornament and for defence, until others have been planted, and have grown to such maturity as to supersede the necessity of the original growth. There is something unaccountable in this total want of taste, in regard to the exterior of a man's dwelling and the general appearance of his premises. No man will wear a piece of flannel direct from the loom without color or dressing, but thousands will leave their building premises wholly unadorned for generations for want of that finish which a very little labor or expense would impart to them, and which would render them inviting to every beholder. There is no man who sees a well selected growth of trees clustering around a habitation, judiciously arranged, who does not feel interested in the exhibition, and yet he may pass along to his own dwelling, which is destitute of every thing of the kind, and not even think that his own premises might just as well be furnished in this manner as not to be; and this single fact is enough to teach us that our countrymen need to cultivate a better taste in this particular. It is important to the rising generation. We are all creatures of habit, and our tastes are regulated very much by the objects with which we are associated in life. I doubt whether the young lady can be found who paints well, or who has cultivated her taste in the selection and arrangement of a flower garden, who does not exhibit the same improved taste in her dress, and in all her domestic arrangements. So with the parent: if he is habitually associated with objects of taste around his habitation, he will soon exhibit this improved taste in all parts of his premises; but place him in a habitation where there is nothing to shield him from the burning rays of the sun in mid-summer, as soon as he steps from his threshold, or to break the force of the tempest *in* winter, and he is wretched.

Take the citizen of Damascus, in Syria, from his continuous shade and garden walk, and place him in one of our cities, where he can see nothing but boards, shingles, brick, and paint, and can *feel* nothing but the reflected rays of the sun, and he will say with Jonah, *It is better for me to die than to live!* But there are other advantages to be derived from ornamental and forest trees around our habitation than those I have already suggested. Facts will show that the country is more

healthy than the city, and that a new country but partially cleared of its deep forests, is, other things being equal, more healthy than an older country that has fewer forests. From these facts we may infer that forests promote health and longevity. It is now a well authenticated fact, that the growth of plants and trees absorbs azote or mephitic air, that which does not promote life, but is destructive of it, and yields oxygen, which is the great supporter of life in our atmosphere. The lungs of men, and all animals, in respiration decompose the air they inhale, retaining the oxygen and exhaling the azote or carbonous; and for aught appears, if the great Author of our being had not provided the means in his great laboratory of nature for supplying the deficiency of oxygen, produced by respiration, the time would come when our atmosphere could no longer contribute to life, but would absolutely prove fatal to it. We see, therefore, in this, the wisdom and mercy of our Creator in his *winds*, appointing them to bear from the country and the forests the principle of life to our populous cities almost without tree or shrub, and returning, in exchange to the country, that atmosphere which contributes so largely to vegetation. But would it not be wisdom in our citizens to provide for this domestic consumption of the atmosphere, and not depend on the variable supplies of foreign commerce? And ought they not, so far as it may depend on them, to have the principles of life in operation where they know the principles of dissolution are operating,—that the tree of life may stand fast by the tree of death?

But there is another consideration to be taken into the account, that is more inspiring to many persons than that of health or of life: it is a *pecuniary* consideration. I know of no way in which a man can enhance the value of his real estate so much, at so small an expense, as he can by furnishing his premises with ornamental and forest trees. A few years ago I owned a small place in a neighboring state, which I adorned with a few trees, all from the forest. I should think the number something less than thirty, and cost me less than five dollars. I have always believed that I sold that place for one hundred dollars more than I should have done, had it not been for those trees. Those who have succeeded me in that possession have cut down some of those trees, and suffered others to go to decay, so that the whole face of things is changed, and a correspondent says, "Those *Goths* have removed all your trees and shrubbery in your yard, and the place appears deserted." There is a farm lying in the town where I now reside, which is ornamented with perhaps about sixty sugar trees of thirty years' standing, and may have cost the planter of them, originally, three dollars. A gentleman told me this morning, that if he owned that place he would not have those trees cut down for five hundred dollars. He spoke seriously. At what rate of interest must the three dollars have been at, these thirty years, to produce the five hundred dollars? Those who have leisure can easily calculate it. I have seen in some parts of the country forest trees set to serve for posts, and rails were let into them, to a great saving of this species of timber. The finest exhibition of this kind of fence is to be witnessed in the town of West Hartford, Conn., on the Poughkeepsie turnpike. This method may be adopted by every farmer to a great extent, and have permanent posts in all places where the shade of the trees would not be a serious detriment to his tillage land. And as in many parts of our country, wood for fuel, and timber for fence, are becoming expensive articles of consumption, may we not hope that the public attention will be turned to their interest and great convenience in this respect?

In respect to the evergreen being an ornamental tree to a habitation, as suggested by Mr. Sayres, and some others among your correspondents, I must beg leave to differ. All the evergreens, except the pine, are natives of wet and low lands, and are not cultivated in dryer soils, where we expect to find the habitations of men. And to me there appears an incongruity, a forcing of nature, to throw groups of evergreens around a habitation where they are not expected to be seen. It is something like finding a habitation, in a swamp. There is one thing further I would suggest to those who would succeed in planting trees. It is highly important they should be planted *well* in the first instance, and so firmly supported by stakes and boards that they shall not rock in the wind for two or three years after their planting, until the fibres of the roots shall have taken such hold, and become so large, as to be able of themselves to support the tree amidst the conflicting elements. The greater number of failures is owing to want of care in this particular.

Very respectfully, yours,

H. H.

Dec. 10, 1834.

Remarks.—We disagree with our correspondent in reference to evergreens. Without any reference to authorities and practice, we will confine ourselves to the idea he has advanced—the impression they convey when about a dwelling. Evergreens generally are not so exclusively found growing in swamps as to have a dreary idea—that of cold and wet grounds—associated with them, but, in our opinion, directly the reverse. Nature has designed the evergreen to lessen the gloom in winter, and to be a protection from cold. The red cedar, for instance, is found on all upland soils, and affords shelter and warmth to birds, wild beasts, and domestic animals. It has also the property of protecting from frost tender plants. A few limbs of this tree thrown over beds of garden vegetable, will preserve them in health through the severest winter. A cluster of evergreens placed near a dwelling, or barn, so as to break the most violent and cold winds, will render the places they protect about these buildings several degrees warmer. If so, then there is no "forcing of nature," but a pleasing congruity. The writer of the above article derives his impressions from what he has seen and experienced. Perhaps he has been familiar with evergreen swamps, and has never derived any benefit from evergreens. We, on the contrary, have been more familiar with these trees, where they have protected sandy plains, bleak hills, and elevated grounds. When a little boy, we have often sought, with benumbed hands and face, the lee and sunny side of a cedar bush or hedge, and there, seated on dry leaves, have had the glow of warmth to return. (See vol. vii., page 36.)—[Ed.]

Principles of the Natural Style of Landscape Gardening. By L. T. [For the New-York Farmer.]

In a recent number of his Magazine, Mr. Loudon has an excellent article on this subject, in a notice of his forthcoming work, the Arboretum Britannicum, or portraits from nature of all the trees and shrubs which endure the open air in Britain. I by no means agree with him in the remark, that "there can be no landscape gardening in the natural style, where only indigenous trees and shrubs are used." Even admitting that the recognition of art is the principle, still great beauty of landscape can be obtained by indigenous trees, if, in number and arrangement, they avoid *sameness* with the surrounding nature, or wild scenery. On Mr. L.'s principles, it seems to me that when foreign trees become common in fields, and woods, as well as in parks, the art of land-scapegardening in the natural style will come to an end. But, Mr. Editor, here are his reasonings.

"Hitherto it has been considered that the object of the landscape-gardener, in laying out grounds in the modern or natural style, is to imitate nature, and to produce picturesque beauty. The principle of the imitation of nature has been carried so far, by some theorists, as to induce them to recommend the production of fac-similes of wild scenery; while others, who do not go quite so far, would yet employ only, or chiefly, the indigenous trees of the country in which the grounds to be laid out are situated, in order that the woody scenery so produced might be mistaken for such as is natural. There is not a single writer, as far as we are aware, from Shenstone to Knight, Price, and Gilpin, who does not adopt the imitation of nature as a principle; and who has not, at the same time, forgotten, or failed to see, that, in so far as landscape-gardening is to be considered one of the fine arts, the principle of the imitation of nature must be rendered subordinate to that of the Recognition of Art. If the imitation of nature were the sole principle of guidance, then the perfection of park scenery would be, that it should be so like the scenery of a natural forest as that it might be mistaken for it. Now, though such scenery round a castle might be very feudal and baronial-looking, and, perhaps, what many would prefer, yet it would have no pretensions whatever to be considered as a work of art. So far from art being so concealed, in the productions of modern landscape-gardening, that it should be nowhere discovered, a principle as old as Tasso (L'arte che tutte fa, e nulla si scopra,) the true, and, indeed, self-evident, principle is, that art should be discoverable everywhere in every work of art: in modern landscape-gardening, for example, in the smoothness of the turf, in the high keeping of the walks, and, above all, in the predominance of exotic trees, shrubs, and plants, over indigenous ones. Even the turf should be composed of grasses different from those of the surrounding grass fields. In the ancient or geometrical style of landscape-gardening, art was everywhere avowed; and, therefore, so far, that style has greater claims to be called a fine art than the modern style, as the latter style is generally practised, or is recommended to be practised, by most authors who have written on the subject. The truth is, that the change from the old syle to the new was so sudden and violent as to prevent the admirers

of the latter style from examining it deliberately, and tracing it to first principles. But to enter into this subject properly would require more room than can be here afforded; and we, therefore, merely state, that the point on which all the authors who have hitherto written on landscape-gardening have been deficient, is the omission of the principle of the Recognition of Art. It does not follow, from this, that the writings of these authors are not good, so far as they go; because, in general, they have been guided by correct feeling: but, by stopping short of this principle, the claim of landscape-gardening to be considered a fine art has never yet been satisfactorily established, nor a sufficient reason shown why the use of foreign trees and shrubs is essential to the modern style. Henceforth it may be considered as an established principle, that there can be no landscape-gardening in the natural style, where only indigenous trees and shrubs are used. Where no foreign trees are to be obtained, recourse must be had to the geometrical manner of disposing of the local ones. Those who wish other authority than ours on this subject, we refer to the Essai sur l'Imitation, by M. Quatremere de Quincy: a work which a friend of ours is now translating for us, and which we intend to publish for the improvement of young gardeners and architects.

"The progress of taste, like the progress of every thing else, is gradual; and, when it is considered that it is only of late years that we have had any thing like satisfactory theories of taste in the fine arts generally, it is not to be wondered at that we have not yet arrived at a comprehensive and satisfactory theory of landscape-gardening, which should at once trace the beauties of both the ancient and modern styles to the same fundamental principles.

"We have said above, that the principal effects in modern landscape-gardening, considered as a fine art, depend on the use of foreign trees and shrubs; and we shall now assign our reasons for being of this opinion. These reasons we have hinted at in various papers, more particularly in reviewing Mr. Gilpin's work (Gard. Mag., viii. 701,) and in our Notes on Bearwood (ix. 679.) They are grounded on the principle that all art, to be acknowledged as such, must be avowed. This is the case in the fine arts: there is no attempt to conceal art in music, poetry, painting, or sculpture; none in architecture; and none in the geometrical style of landscape-gardening. Why should there be an attempt to conceal art in modern landscape-gardening? Because, we shall be told, it is an art which imitates nature. But, does not landscape-painting also imitate nature; and yet, in it, the work produced is acknowledged to be one of art? Before this point is settled, it is necessary to recur to what is meant by the imitation of nature, and to reflect on the difference between repetition and imitation. In what are called the imitative arts, it will be found that the imitation is always made in such a manner as to be a totally distinct work from the thing imitated; and never, on any account, so like as to be mistaken for it. In landscape-painting, scenery is represented by colors on a flat surface; in sculpture, forms, which, in nature, are colored, are represented in colorless stone. The intention of the artist, in both cases, is not to produce a copy which shall be mistaken for the original, but rather to show the original through the medium of a particular description of art, to reflect nature as in a glass. Now, to render landscape-gardening a fine art, some analogous process must be adopted by the landscape-gardener. In the geometrical style he has succeeded perfectly, by arranging ground and trees in artificial surfaces, forms, and lines, so different from nature as to be recognised at once as works of art. A residence, thus laid out, is clearly distinguished from the woody scenery of the surrounding country; and is satisfactory, because it displays the working of the human mind, and confers distinction on the owner as a man of wealth and taste. A residence laid out in the modern style, with the surface of the ground disposed in imitation of the undulations of nature, and the trees scattered over it in groups and masses, neither in straight lines nor cut into artificial shapes, might be mistaken for nature, were not the trees planted chiefly of foreign kinds not to be met with in the natural or general scenery of the country. It is true that there are other circumstances belonging to a country residence which might determine it to be a work of art, altogether independent of the trees; but these circumstances we at present leave entirely out of view, and speak of the ancient and modern styles of landscape-gardening, solely as both are influenced by the kinds of trees planted, and by the manner in which they are disposed. We conclude, then, that the geometric style of laying out grounds is entitled to be considered a fine art in consequence of the manner in which the trees are disposed; and the modern stlye, in consequence of the numerous sorts of foreign trees employed. (See, on this subject, Art. I. in the Architectural Magazine, Nos. vi. and viii.)

"Though a taste of trees has existed from the earliest ages, that taste, in this country at least, may still be considered in its infancy. It is remarkable that a taste for foreign trees was earlier introduced in France and Germany than in Britain; and that it is still more general and more intense among the men of wealth and taste in those countries than in England. When Messrs. Loddiges planted their arboretum, in 1816, it is generally understood that the more rare species were obtained from Germany. Perhaps the cause may be, that natural woods cover a larger proportion of the surface all over the Continent than they do in Britain; because, abroad, in addition to their other uses, forests supply the place of our coalfields; and thus, though the subject of forest culture is more interesting to the Continental than to the British proprietor, yet the former sets less value on a native tree, and is more eager to display such as are foreign to the soil. An English landowner is almost always a great respecter of trees generally, but seldom knows any thing of particular sorts; he, therefore, cares very little for their particular beauties, and contents himself with being an indiscriminate admirer of them. Hence, the unwillingness of most persons to cut down trees, however improperly they may be placed; or to thin out plantations, however much they may be crowded, and however great may be the injury which the finer foreign stores are sustaining from the coarser-growing indigenous kinds. This indiscriminate regard for trees, and morbid feeling with reference to cutting them down when they are wrongly placed, or too thick, are principally the results of ignorance of the kinds and relative beauty of the different species, and of want of taste in landscape-gardening. When we consider that it is not much above a century since American trees began to be introduced into this country, this is not to be wondered at; and, more especially, when it is remembered that planters, generally speaking, have few opportunities of seeing specimens of these trees, so as to become acquainted with them, and thus to acquire a taste for this kind of beauty and pursuit. The botanic and horticultural gardens, now establishing throughout the country, will tend to remedy this defect, by exhibiting living specimens; and our Arboretum Britannicum will, we trust, aid in attaining the same end, by exhibiting portraits, drawn from nature, of all the foreign as well as indigenous trees and shrubs which can endure the open air in Britain. The private arboretums established or establishing in so many country seats will also do much good in spreading the taste; and, when it is once properly understood that no residence in the modern style can have a claim to be considered as laid out in good taste, in which almost all the trees and shrubs employed are not foreign ones, or improved varieties of indigenous ones, the grounds of every country seat, from the cottage to the mansion, will become an arboretum, differing only in the number of species or duplicates."

Use of Bone Manure. Copy of a Letter from Mr. OBH. ELLIOT to Mr. JOHN HORNBY, dated Middleham, Elizabethtown, N. Jersey, Nov. 29, 1834. [For the New-York Farmer.]

SIR,—Last year I manured with bone dust one acre of dry sandy loam, in a field containing several acres, and raised a good crop of ruta baga; and in the spring of this year, having dressed the whole of that and the adjoining land with farm-yard manure, I took a crop of early potatoes from the whole piece; and the vines on that part where the last year's dressing of bone manure was put, (as described above,) were conspicuously more luxuriant than any others; we however hastily dug the crop, and did not carefully ascertain the difference by measure.

After this crop was secured, I ploughed the land in such a manner that the furrows passed diagonally through the aforesaid acre, and then sowed white round turnip seed over the whole land, in the same direction wtth the furrow. A drought which lasted throughout August prevented the vegetation of the seed, except on that acre: the remaining good effects of last year's bone manure were evident, for no seed started on either side of the aforesaid acre, where no bone manure had been used last year, till the rain which fell 1st of September; and it has consequently produced small unmarketable plants only, whilst the acre which had the bone manure last year (no bone manure being used in that field this year) did produce its plants freely during the drought, and has yielded a good crop of handsome marketable bulbs.

In another field, which grew corn in 1833, and for that crop was dressed with compost farm-yard manure, I planted potatoes this year, and on carefully measuring their produce, a single row, which was manured last May with bone dust, contained five bushels

one gallon, whilst those adjoining, manured with the farm-yard, contained only four bushels one gallon one quart each.

Used at the rate of fifteen bushels of bone dust, and twelve large two-horse loads of dung, per acre.

Remarks on the Trial.—The cost of bone dust, and the labor of getting it on the land, would be, say seven dollars, which would be the utmost; cost of common manure, and the labor of getting it on the land, would be at least fourteen dollars, leaving a balance of one half the amount in favor of bone dust. The produce from bone dust is twenty per cent. more than the common manure, and the durability of bones greater.

I remain your obedient servant,

OBH. ELLIOT.

Manufacture of Oyster and Clam Shell Lime in the City of New-York—Its Important Uses. By the EDITOR.

As society advances, there is greater economy or less waste in the articles of consumption in supplying the wants of man. This is strikingly illustrated in applying to useful purposes old bones and the shells of clams and oysters. In previous numbers of our work we have furnished much information in reference to the former, particularly as an article of manure. We now propose to furnish some not less interesting and important on the use of shells.

Until within six or eight years, the shells of all the shell fish consumed in this city were, in violation of law, thrown into the streets, or were, at considerable expense, carted to the upper parts of the city and thrown into the river, or used for filling up vacant grounds, where they often became a nuisance; but now a little lime thrown on them removes all smell. Keepers of oyster-houses were under the necessity of paying fifty cents and more per load to get their shells carted away. Now they are sought after at the rate of two cents per bushel.

About seven years ago Mr. Knapp commenced, in Second street, to burn shells for lime. Several unsuccessful efforts were made prior to his undertaking. At first he was supplied with shells without pay, indeed more than he wanted, they often being dumped on his premises in the night. But such has been the gradual progress of his business, that he now pays three cents per bushel delivered. From September 28 to December 30, 1834, he has had delivered at his kilns *thirty thousand and eight hundred bushels* of oyster and clam shells. During this period, and in March, April, and May, these kinds of shell fish are consumed in the greatest quantities. Supposing he buys the same quantity in the spring, and as much during the remaining six months, the whole amount will be 92,400 bushels. There are two other kilns in the city, which probably buy half as many, equal to 46,200. If to these are added 11,400, as those thrown into the streets, the whole will make 150,000 bushels of oyster and clam shells as the quantity annually furnished in the city by the consumption of these shell fish. These shells have in a few instances been brought to this city from Connecticut.

The fuel used in burning the shells is that which was formerly an expense to the owners of coal yards to get rid of. It is the very fine coal, that can be used for scarcely any other purpose. He now buys it at 25, formerly at 12½ cents per ton. There have been times, however, when he has paid from 1 to $2 per ton.

In the season of business, Mr. K. sells per day upwards of 50 loads of 16 bushels each—unslacked at 15, and slacked at 7, and that for manure at 6 cents per bushel. He prepares it unslacked, and very superior, for white-washing, at 50 cents per bushel.

This lime is principally used for buildings. It is a little more expensive than stone lime, but is considered superior, particularly for expeditious work, and for use in frosty weather. In the latter particular consists the very great importance of this lime. Formerly it was unsafe to erect buildings in frosty and winter weather; but now, by the use of this lime, new, elegant, and substantial houses, in every part of the city, are being built in the midst of winter. This is of great importance to builders, mechanics, and laborers, affording them employment in a season of the year when formerly all such work was suspended. Mr. K.'s shell lime sets twice as quick as other lime. This quality prevents injury from frost, and enables builders to proceed with less interruptions from frosts and storms. Instances have occurred when, with stone lime, a whole side of a building has been carried up in a day. Before morning, and before the lime sets, a storm commences, and the wall is either materially injured, or tumbles to the ground. Instances have occurred in the use of shell lime, when the most violent winter storms have beat against a recently erected wall of a house without the least injury.

Cornices made of this lime are durable, and much admired. Mr. K. makes a preparation of this lime for painting, or white-washing out-houses and the walls of rooms. Its price is $1.25 to $1.50 per barrel. It can be made of any color. This, having some rock salt mixed with it, makes an excellent white-wash for brick, to prevent the access of damp and wet. Mr. Gross, a lumber merchant of this city, has had it on his buildings four years.

For manure it has been used to some extent, principally on Long Island and in New-Jersey. Among those who have used it, and can speak favorably of it, C. H. Hall, Esq. of Harlaem, Mr. Jones, of Third Avenue, Mr. Howland, of the firm of G. G. & S. Howland, of this city, and Mr. Anderson, of Hallett's Cove. Mr. Hall has made extensive use of it in compost: from 50 to 100 bushels per acre are applied.

A Leaf from an Introductory Grammar of Agriculture. By D. F. AMES. [Communicated for the New-York Farmer and American Gardener's Magazine.]

What is Agriculture?

Agriculture is the science of cultivating the earth, for the purpose of producing the greatest amount of necessaries and auxiliaries to sustain life.

Is the cultivation of every kind of grain, fruit, and flower, denominated Agriculture?

No: the various branches have their peculiar appellations. The term Agriculture, or Husbandry, is generally confined to the mode of producing corn, grain, roots, and herbs, such as custom has made necessary to the sustenance of man and beasts.

How is the production of fruit named?

Pomonaculture.

What is the cultivation of flowers denominated?

Floriculture.

How is the cultivation of trees expressed?

By the word Arboriculture, which, like the former, is a word composed of the latin name of the thing cultivated, with an English termination.

What is understood by the term Horticulture?

Horticulture is generally used to express the raising of fruits and vegetables, commonly called gardening.

What are the principal objects of choice in the commencement of a garden?

Soil and situation.

What is soil?

The surface earth that is worked by tillage or digging, for the reception of plants and seeds, is technically called the soil.

What are the component parts of soil?

All soils are composed of argil, sand, water and air, whatever may be their color or texture, and it is a due proportion of each that causes fertility, or an undue preponderance of one or more that occasions sterility or barrenness.

What is argil?

Argil is the soft mucous part of clay.

What causes the various colors of the earth?

The coloring of the soil is occasioned by a proportion of iron, or other metal, and is of little importance.

Describe an eligible situation for a garden?

A gentle slope to the south or south-east is preferred, well sheltered from the northerly winds, and contiguous to a pond or run of water.

Why is a slope or declivity preferred to a flat or level surface?

Because stagnant moisture is very injurious to most plants, and a level surface often retains the water.

What is the advantage of a pond, or run of water?

Both for the purposes of irrigation and the convenience of watering many plants, shrubs, and trees, that require artificial watering during very dry seasons.

What is irrigation?

Irrigation is an artificial mode of covering land by water for the purposes of fertilization.

How is it performed?

By various methods, but generally by damming up the stream, or altering its course so as to overflow the intended space.

At what season is this generally done?

During the winter, fall, or spring, while vegetation is in a dormant state.

How is it supposed to benefit vegetation?

By removing the excrementory matter rejected by the plants as food, and by decomposing and depositing fresh material to renew the soil.

Is it necessary to renew or refresh all soils?

Repeated cropping will exhaust the soil, which must then have an additional supply of food for plants, either by applying manures that contain it, or by a dressing of lime or some other substance, calculated to prepare fresh food from matter already in the soil.

What is the soil that will require the most manure?

A light porous sand is soonest exhausted, as the food held by absorption will be either washed down too deep to be taken up by the spongeoles of the plants, or it will be evaporated by the sun and air.

What is the food of plants?

The specific food of plants is not satisfactorily ascertained; they were formerly supposed to take little save water from the soil, but modern science has discovered that most soluble substances are taken up with the water from the soil, and those unsuitable are ejected again by the roots.

Do all plants require the same food?

No: different plants require different food, as may be seen by the continuing one crop on a place without additional manure, until it will no longer bring it to perfection; a different description of plant may yet be raised in good quality from the same land without additional manure.

What is the effect of manures?

Manures supply moisture, and retain it in the soil together with carbonic acid gas, potash, and other substances, for the nourishment of plants, all of which must be in a perfect liquid state to become food for plants.

How do plants imbibe nourishment?

Plants derive their food principally from the earth, and absorb it, or take it up, by little spongeoles, or mouths, that are placed on minute fibres, at the extremities of the roots."

REMARKS.—We say, "Go on, revise and finish."—[ED.]

NEW-YORK FARMER.

JANUARY 1, 1835.

We received, after the last form of the present number of the Farmer was ready for the press, the "First Annual Report of the Proceedings of the Rensselaer Agricultural Society, being for the year 1834," together with the Address delivered at the annual meeting, on the 7th October last, by Mr. S. Blydenburgh, both of which will appear in our next number.

NEW-YORK STATE AGRICULTURAL SOCIETY.—Our readers will bear in mind that the Anniversary of this Society takes place on the 12th of February next.

WEATHER AND CROPS FOR DECEMBER.—With the exception of extreme cold on the 14th and 15th, during which days the thermometer sunk 25 degrees below freezing point, the weather has been open and mild, affording the gardener every opportunity to secure his crops. For late pasturing of sheep, and other stock, the month has been favorable to those who think more of saving a little fodder than manure. Winter grain has had an opportunity to extend its roots, and thus guard itself against extremes of freezing and thawing.

On the 25th a snow to the depth of an inch covered the ground; and another on the 26th, but of less quantity. The whole not sufficient to form a covering to earth to protect the grain. On the 29th, a fall of snow of sufficient depth for sleighing took place.

The canals and rivers of this State remained unincumbered by ice until late in the season, giving farmers and forwarding merchants every facility to get their grain to market.

In our last number we inserted an article stating that there would be no deficiency of the cotton crop, compared with that of last year. In addition to the following circular, signed by a great number of planters and merchants, the rise, three farthings per lb., by arrivals from Liverpool on the 24th, seems to render the previous statement incorrect.

COTTON CROP OF 1834.—Mr. Editor: Accounts have gained currency, through several mercantile journals in different parts of the United States, setting forth that the present Cotton crop will be as large, if not larger, than the crop of last year.

We deem it of vast consequence that the public mind should be correctly informed upon a subject of such paramount importance to every one in this community, and for this purpose the subscribers have met together, exchanged their views and opinions, and have come to the following conclusions, viz.:

1st. That the present crop of Uplands throughout this State will fall short of last year fully one third, and, as far as we are informed, the deficiency will be about the same in each of our sister States, North Carolina and Georgia.

2d. That in many sections of the State the crop is already all gathered from the fields, and in no part of it is there as much to pick out as there was at the same period last year, although from the unfavorable fall, the cotton commenced to open much later than the last.

3d. That of the present crop already two thirds have changed hands, and that not over one fourth will remain in the hands of the growers by the first of January next. The usual proportion being one half. Very few of the planters have been holding back or storing, but, on the contrary, are bringing it to market as fast as it is gathered. About this period last year, there were 15,000 bales stored in this place; at this time we believe the quantity stored falls much short of 1000 bales.

4th. That the sale of Cotton Bagging and Bale Rope is so much diminished as must convince every one of a great deficiency.

5th. The above conclusions have been formed from a mass of testimony derived from planters, correspondents, travellers, and our own personal observations, and we are unwilling that it should go abroad as the exclusive opinion of the merchants of this place, but that it be substantiated by gentlemen of the highest respectability from all sections of our State.

Resolved, therefore, That the opinion of a few of the principal planters from the different districts of our State be obtained in regard to the extent of the present crop.

Resolved, That the same be published in each of the papers of this place, and that a copy be sent to the offices of the Charleston Courier, and Mercury, and the New-York Courier and Enquirer, and Daily Advertiser, with request to give it one insertion.

DAVID EWART, Chairman.
JAMES SMITH, Secretary.

Columbia, S. C. 12th Dec. 1834.

COTTON CROP FOR 1834.—The cotton crop of 1834 has been estimated at 1,100,000 bales. We think it will rather exceed than fall short of that vast amount, though the crops, in some places, were much injured by storms and floods and the rot—and the force of the cultivation weakened by the prevalence of the cholera. Of the amount stated, about 200,000 bales will be required for the home consumption. If the bales are taken at an average of 350 lbs. each, which, perhaps, is a low estimate, we have 385 millions of pounds, worth at 10 cts. per lb. $38,500,000.

We see that the crop of last year has been estimated at 1,205,000 bales. If this is correct, the crop of the present year is rated much too low.—[Niles' Register.]

FAREWELL ADDRESS OF THE EDITOR OF THE SOUTHERN AGRICULTURIST.—From the December number of this work we extract the following paragraph, from the farewell address of Mr. Legare. In the retirement of Mr. L. the planters of the South meet with a loss not easily supplied.

It is now seven years since first we commenced the task of editing this work, and having brought it into existence, and conducted it thus far, we cannot part with it, and dissolve our relationship with its readers, without regret. We have withdrawn from all agricultural pursuits, and it is more than probable we shall never again resume the task which we now abandon. Other pursuits claim our attention, and our health requires that we should cease to labor at the desk. But we cannot thus sever the ties which have bound us together, as editor and reader, without feelings of melancholy regret, which is heightened when we think, that in now bidding you farewell, we bid you farewell forever. During the period we have labored in this vocation, we have formed many valuable acquaintances: with some, we have become personally intimate; but with many, our intercourse has been but by letter, and yet, not the less familiar for being personally unknown to each other. Wherever we have travelled in these States, we have found acquaintances who have known us as editor of this work, and who have most cheerfully extended to us all the hospitalities for which these Southern States have become so well and so justly celebrated. Wherever we have gone, we have had every facility extended to us for inspecting the agricultural operations of that particular section of country, and even the minor operations of plantations have not been hid from us. Our object, in all our agricultural excursions, has been to gain information that might be useful to our readers and the planters of the South generally. Our motive appeared to be justly appreciated; and we have ever met with the greatest politeness and hospitality, whilst nothing which was thought worthy was withheld from us, even when the practices were admitted not to be such as they might or ought to be. Nor has this been all. No sooner had it become known that we contemplated making such excursions, as frequently as other circumstances admitted, than invitation after invitation was proffered to us, and it would take us many years to accept of all we now have on hand, devoting the time we usually allotted to them; and others have more recently been extended to us.

TENNESSEE FARMER.—We have received the first number of a monthly periodical with this title, published at Jonesborough, by Thomas Emerson, at $1.50 per annum. Should this work be liberally supported, it would doubtless be the means of advancing the agriculture of Tennessee; the condition of which may be implied from the following extract from the editorial notice.

The first thing then will be to point out the best mode of preserving the fertility of the soil where it already exists. The second, to communicate the most easy, cheap, and expeditious modes of restoring to their original fertility lands which have been impoverished by injudicious management, and of still farther increasing the fertility of lands of both descriptions. When it is considered that the labor and expense of cultivating and harvesting a field, producing ten bushels of corn, or five of wheat, falls little, if at all, short of that which is required on one producing from fifty to one hundred bushels of corn, and from twenty to thirty of wheat, and that the product of the former, at least in this country, will scarcely suffice to defray the actual expense of cultivation, while the excess beyond the amount of that product, gathered from the second, will be nett profit, the vast importance to the farmer, of preserving and creating fertility of soil, may be easily appreciated.

EARLY RISING—REWARDS OF INDUSTRY.—We have always flattered ourselves that we were an early riser; and although we make it a rule the year round to greet the sun at his rising, yet we find some of our neighbors earn their breakfast before we leave our couch. We will instance one of them. At this season of the year, the first one we generally see on going out-of-door in the morning is a neighboring

German gardener, with his fat sleek horse before his cart, drawing a load of manure from the city, a distance of two miles or more. About five years ago, he leased five acres of ground; and at the time had not money sufficient to buy a horse. By the laborious industry of himself and wife, he has succeeded in putting out at interest *one thousand dollars*. One of his neighbors has long hired a piece of ground on equally favorable terms; and he is sober and industrious, but is now worse off than when he commenced. Difference of management must have caused the different results. The last one is a bachelor. Perhaps the ladies will account for his want of success, and not pity the lonely man.

Economy among Gardeners.—Gardeners in this country, that labor by the month, are generally poor. This is owing to the short periods they retain a situation, and to a want of proper economy. Many of the German gardeners, who come over to this country, are an exception. We will give an instance. A neighbor of ours had living with him a German gardener, who has been in this country six years. During this period he has been with three employers, without losing any time. His wages have been $10 per month—equal to $120 a year. From this income he has succeeded in depositing in the Savings Bank *six hundred dollars*. He knits his own stockings in winter evenings, buys cheap strong clothing for labor, and goes regularly to church on Sunday, very decently dressed. This gardener, late last fall, drew out of the bank $100, and with this sum sailed for Germany, to see his parents, intending to return in the spring to commence the gardening business for himself, with his five hundred dollars.

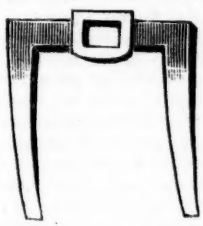
Employment of Gardeners in Winter.—Forcing Vegetables.—On one of the roads leading from this city there are five places for selling intoxicating liquors, and all within a stone's throw of each other. These places constitute the majority of the houses on the road in their vicinity. The last one is a mere shantee, set up by a gardener for the winter's employment. He carries in his pocket recommendations as a gardener from one of our principal horticultural establishments near the city, and from other sources.

In a number of the preceding volume of the Farmer we called the attention of gardeners to the importance and benefits of qualifying themselves for teaching district or common schools in winter. The above gardener, if he would direct his attention that way, would be fully as well qualified for such a charge as one half of those who do have it. How much more respectable! How much more safe for himself! How beneficial, instead of injurious to the public!

In reflecting on this subject, we regretted that the business of forcing vegetables was not more general—to afford more employment to gardeners in our long winters.

Boiled Flax Seed.—This is the season of the year, when cattle, horses, and sheep, should occasionally have a little flax seed, boiled in water, and mixed with their food. If they are fed principally on dry food, the flax seed, as well as the liquid from it, is the more necessary.

Uncultivated state of New-York Island.—In our seventh volume we called the attention of our readers to this subject. In passing along the 8th Avenue, in the early part of the preceding month, we observed four German men and one woman clearing up one of the most forbidding pieces of ground on the Island. It was hilly, rocky, marshy, and covered with briers—so rough, that but a small portion could be ploughed; and the remainder they were subduing by hand instruments. The woman swung the grubbing scythe with manly strength and dexterity. The men used an effective in-



strument of this shape, with a handle three or three and a half feet long. The labor of tearing up a stiff sward, filled with roots, was much easier than with any other instrument we are acquainted with. We immediately engaged a German to make some. They may be had at 81 Barclay street.

The lot of ground is near 60th street, and consists of ten acres. The Germans have a lease on it for ten years, at $100 per annum. In its former condition it was not only not worth 100 cents, but was very forbidding in appearance, and a source of unhealthiness. In six or eight months this hitherto unproductive spot will be covered with fine vegetables, affording to the industrious cultivators—should the season be propitious—a handsome profit. The owner of this property has set a laudable example to others, and performed what the public good requires of all the holders of similar property. There is no building of any kind on the premises, except a shantee erected by the lessees. It will thus be seen that they commence under many unfavorable circumstances. If, therefore, this spot can be converted into a productive garden, so can almost every rood of ground on the Island.

Salting Hay.—In a conversation with a farmer of West Chester county, he informed us that he makes it a practice to salt all his hay when he puts it into his barn. He finds numerous advantages from the practice. Stock eat it more freely, waste less, and thrive better. It can be secured in finer order, and it keeps longer; does not become so dry and dusty as unsalted hay. He also considers it a preventive of many diseases. One season, a considerable portion of his hay was obtained from low wet ground, where it grew coarse. The remainder was of a very superior quality—so much so, that he deemed salting unnecessary. The other coarse hay had a liberal quantity of salt put on to every layer, as it was mowed away in the barn. In winter, he was surprised to find his horses and cattle give this coarse salted hay the preference.

Cranberries.—The papers inform us that a gentlemen of Syracuse, who spent some time at Green Bay, saw great quantities of these berries. He engaged to collect large quantities, and had them forwarded to this city. They were considered superior; and met with a ready sale.

American Filberts.—We have laying before us some as fine filberts as we ever saw, raised at Lansingburgh, in this State, by Mr. Walsh. Mr. W. says, the season was not favorable, and that these are smaller in size than some he raised before; but, they are nevertheless excellent in quality, and, even as to size, larger than the average of the imported nuts.

The above is copied from the New-York American. Large quantities of these nuts are imported. Mr. W. is fully of the opinion that our climate will insure their fruitful growth. He has cultivated them for several years.

Effects of Prolonged Summer in England.—The second crop of Myatt's new pine apple strawberry was considered as good as the regular one. Mr. Loudon, in his Magazine, observes,

A second crop of whortleberries (Vaccinium Myrtillus) has ripened at Edworth Moor in Lancashire. Fine ripe figs were grown in the open air against a wall in Aberdeen. Pear trees, in the gardens of Sir T. G. Cullum at Hardwicke House, in Suffolk, have produced fruit on the young spring shoots of the present year, which flowered at Michaelmas: the pears are of the Passe-Colmar and Marie Louise kinds. A fig tree on the same property has its second crop perfectly ripe. At Elmswell, in the same county, one tree, which has already produced two crops of apples, is in bloom for the third. In York, white currants, fully ripe, were gathered in a garden opposite the Pavement; and at Scarborough Parade, large strawberries have fully ripened, notwithstanding the exposure of the situation to the sea breeze. The gardens and fields near Sheffield present all the appearance of spring; flowers and plants having blown and borne fruit a second time. The Inverness woods have yet scarcely lost a leaf; and are only here and there beginning to assume their autumnal livery. A pear tree in a garden near Huddersfield, which had lost nearly all its leaves, has budded forth again in freshness and full blossom. At Coleridge, in Devonshire, the apple trees have ripe fruit and full flower blossoms at the same time. [Morn. Chron. Oct. 17, 1834.] About London the weather was so fine during the last fortnight of September and the first fortnight of October, that the six and sometimes eight artists whom we had employed, during the whole of that period, in the Horticultural Society's garden, Messrs. Loddiges' arboretum, and in various nurseries, making drawings of trees and shrubs for our Arboretum Britannicum, did not meet with a single day's interruption till the 15th October, when portraits of all the deciduous trees and shrubs were completed. The evergreens will probably occupy them a month or two longer, as the weather can hardly be expected to continue such as to allow of drawing every day in the open air.

Experiments with Potatoes have been carried on, with great care, in the Horticultural Society's garden, for some years past, and the results given in two papers by Dr. Lindley, the last of which is just published in part vi. of the Hort. Trans., vol. i. second series. From this paper it appears that the opinion entertained by Mr. Knight, and a number of other persons, of the superior production of whole tubers over sets, is unfounded. The same result, it is stated, has also been arrived at by Sir George Mackenzie, from experiments made by him in Rosshire. Other instances will be found in our First Additional Supplement to our Encyclopædia of Agriculture, just published.—[Loudon's Magazine.]

CULTURE OF SILK—WHITE MULBERRY—MORUS MULTICAULIS.—The following facts are related by the secretary of the Hampshire, Franklin and Hampden Agricultural Society, in a report furnished to the Northampton Courier.

At the late show of the Hampshire, Franklin and Hampden Agricultural Society, Elizur Goodrich, Jr. Esq. presented a claim for premium on white mulberry set on his farm in Montgomery, in the county of Hampden, and obtained the first premium. He states that in 1833 he had 9000 mulberry trees set on one acre,—the rows 4 feet apart and trees 12 to 18 inches apart in the rows. In 1834 he had 20,000 mulberry trees set on three acres, the rows 6 feet apart and trees 12 to 18 inches apart in the rows; also 9000 mulberry trees set on 4 acres, the rows 6 feet apart and trees 3 feet apart in the rows; that he planted potatoes between the rows, had a good crop, and found the cultivation of the potatoes was advantageous to the mulberry trees. Expecting to use the leaves in the manufacture of silk, he intends to keep the trees cut down to 6 or 8 feet, for the convenience of gathering leaves. The trees are from 3 to 4 years old, and very thrifty.

Mr. Timothy Smith, of Amherst, in the county of Hampshire, also presented his claim for premium on the white mulberry, and obtained the society's premium. He represents, that he has 17,443 white mulberry trees, of which 3,638 are set out on about 100 rods of ground, in rows 8 feet apart and the trees 2 feet apart in the rows, the residue set more compact for the purpose of topping to feed worms. He planted potatoes between the rows, had a great crop, and found the hoeing among the potatoes was beneficial to the mulberry trees. From the experience he has had in feeding worms, he calculates half an acre set with white mulberry will produce feed for 100,000 worms,—says he has what he considers five species of worms, viz.: the Black annual worm, producing *one* crop in a year of *yellow* Cocoons; also the Black worm, producing *two* crops in the year of *yellow* Cocoons; the Grey worm, the large white and the small white worm, producing two crops in a year of *white* Cocoons. The present year he fed only about 30,000 worms, but thinks his mulberry trees might give sufficient feed for an *hundred thousand* worms.

He had worms on feed when the late severe frost came, and gathered a quantity of leaves while frozen, and packed them in a sack which had been used for salt; in this state the leaves were kept green and in a good condition, so that he fed his worms two weeks with them, and the worms devoured them with the same avidity as before they had been frozen. The frost completely destroyed the leaves remaining on the trees. Mr. Smith now thinks that leaves may be preserved through the winter for winter and early spring use. He has 354 promising seedling plants of the morus multicaulis, the product of one paper of the Chinese mulberry seed which he had of the society last spring. On this subject the committee would remark, that from the source and peculiar circumstances under which the seed was obtained from the interior of China, it is believed to be genuine, and not improbable the first good seed imported. The seed has been distributed into several towns in the county, and generally given a good return, unless when planted or sown too deep. Some seed however was lost, and did not vegetate, in consequence of sowing too deep. The most favorable depth is about one quarter of an inch, regard being had to the soil.

The seedlings of the present year standing some distance from each other, gave outside branches, some of which, as an experiment, were made into cuttings, set in the ground with one bud exposed, and did well, although done in a very hot dry season, and while the branches were green and tender. Some seedlings of the present year produced leaves measuring 9½ by 8½ inches before the severe frost, and had the weather continued mild a few weeks longer, it is thought some leaves would have attained the size of 12 or 14 inches. Some seed was sent northerly and southerly to a considerable distance, and one parcel to the distance of 5 or 600 miles, and did well. Should no more seed be received from China, there is now a sufficiency of grown trees and seedlings in such forwardness as in a short time to supply the whole limits of the society with the real morus multicaulis.

PRIZES FOR SPECIMENS OF FLOWER-PAINTING DONE BY LADIES (p. 451.)—The Devon and Exeter Floricultural Society is reported to have introduced a very interesting subject for competition into the flower shows, "by offering a prize for the best specimen of flower-painting done by a lady." Much interest has been excited here by a similar proceeding for some years past; and it is to be hopod that these examples may stimulate other societies to offer similar rewards, thus encouraging the exercise of a talent highly useful and agreeable in itself, as well as pleasing and beneficial, in the perpetuation of a knowledge of varieties and and species of plants that otherwise might become, in their locality, extinct.

S. SAFFRON WALDEN.

We wish we could see prizes offered to the young gardener for the best drawn plans of parks and gardens, or sketches of trees, &c.—[Loudon.]

FORCING ASPARAGUS.—With regard to the asparagus which is brought to Covent Garden Market, during the forcing season, I have observed most of it to be nearly as white in the part grown above ground as in that below; which is no doubt occasioned either by excess of bottom heat, or for want of light and air, or both combined. A sad mistake this in cultivators, whoever they may be. Defects may be excusable in some kinds of fruits or vegetables, which are very difficult of culture; but, in growing asparagus, I conceive there is no reason why any difficulty should exist; nor will it argue any thing in favor of the practice, to attribute it to the desire of bringing the shoots earlier into the market, as by planting the roots a fortnight or three weeks sooner, this might be accomplished. The fact is (and I write from experience,) that, in growing asparagus in artificial heat, the slower the process the better. The heat below should be very moderate; and as soon as the buds appear above ground, all the light and air that can be given with safety should be freely rendered; and, by this means, the asparagus, instead of presenting the blanched appearance, which it often does, would not only assume more of its natural hue, but its flavor would be improved, and its size augmented.—[Loudon.]

We think the following article, from the Edinburgh Quarterly Journal of Agriculture, contains remarks adapted to this country:

On the Disease in Cattle called the "Crochles."
By Mr. JOSEPH TAIT, Portsoy, Veterinary Surgeon to the Banffshire Farmer Club.

Since taking up my residence in this quarter, my attention has been particularly directed to a disease which is very prevalent in this and the neighboring parishes, and known among the country people as the "crochles*." It appears to me to be dependent on the state of improvement to which the lands may be brought, and the facility given to the water to run off, as in those lands where there is much uncultivated ground, and where, from a paucity of drains, the water is allowed to remain on the surfaces, and form a marsh, this disease is much more prevalent, and in many cases proves fatal. I am the more inclined to ascribe the disease to this as a primary cause, as in other soils not of a retentive bottom, and where drainage has been attended to, the disease has never appeared, or if so, in its very mildest form. The cattle in the upper parts of the parishes of Fordyce, Ordiquhill, and Grange, are particularly subject to this disease in its most malignant form. The nature of these lands is marshy in the highest degree, and intersected by large patches of moss, when the water is allowed to become stagnant, or, if carried off, is in many cases only conveyed from the moss to a plot of cultivated ground, thereby extending rather than checking the tendency to disease among their cattle, by supplying them with very bad grass. I have observed that cows generally become affected with this disease in the spring, or a few months previous to calving. They do not appear to be the only animals subject to its attacks. A few years ago, I saw one of Lord Seafield's red deer, laboring under a very severe attack of it. On examining him, I found a good deal of œdematous swelling to exist about the limbs, the joints much enlarged, the gait of the animal at the same time proving that the whole body was similarly affected. It was pitiable to see one of the "finest of the forest" so completely overcome as to be unable to move from the place he was standing in: I advised him to be removed to a change of pasture. This had the desired effect, and in a few months he was in all his pristine glory. I have invariably found this to be the best mode of treating the disease. Indeed, if attended to at first, there is every chance of the animal's complete recovery.

The symptoms of this disease, when observed at first, are pains in the feet, particularly in the fore feet, and enlargement of the small joints of the limbs. The animal becomes hidebound, and the hind quarters so weak and contracted as to prevent her from standing, and in almost every case deprives her of the power of progression. In this the most severe kind of "crochles," I have seen the animal lying on a small plot of ground, and fed with a little grass, or a few cabbage leaves, till completely worn out with lying in one posture, without the power of change, and all over bruised, she has even refused to swallow any thing but meal and water. Death now closes the scene, and presents to the view a most pitiable object, with contracted limbs and almost fleshless bones. I have often thought anxiously of something which might tend to alleviate the sufferings, if not check the progress, of the disease: but I am sorry to say, that no local or general application has as yet produced any good effect. In the first stage of the disease, I have observed bloodletting, and the administering of laxative medicine, to be of some service in arresting its progress; but when the animal was not removed to other pasture, it generally returned with double severity. Empirics abound with their specifics for this as well as almost every other disease, and to whom the ignorance and credulity of the lower orders of our peasantry present a wide field for imposition. A singular case of this fell under my own observation, which I shall relate in the words of my informant. Soon after commencing practice in this district, I was particularly struck with the appearance of a cow belonging to a "cottar." On inquiring into the cause of the animal's apparent helplessness, my informant stated to me, "that she had the crochles, but was now in the way of getting better, a man having pared out the worm that was the cause of the awful complaint." On examining the cow, I found the muscles shrunk, the skin sticking to the bones, joints enlarged, and about three inches sawn from each claw of her feet, and evidently suffering much pain. I endeavored to impress upon him the impropriety of allowing any ignorant person to impose upon him to such a degree, and mutilate an animal so valuable to him, but was told in reply that he was sure the man "knew the very spot where the worm lodged," and that he appeared to have great experience, having travelled much as a "beggar." For this wonderful operation, the very modest

* This disease is called the "cripples" in Forfarshire, where it is very prevalent. The proper name of the disease is Acute Rheumatism.—[Edit.]

charge of 2s. 6d. was only made. I ultimately prevailed on this individual to get her removed to a farm which the disease had never visited. From such a step, the most beneficial change resulted. The animal in the course of a short time began to move about, and would have become perfectly sound, had not the "beggar" removed a part of the bones of the feet along with the "worm." A removal, therefore, from the farm, where such a disease is prevalent, cannot be too strongly inculcated upon every farmer, as it appears to be the only mode of treatment which is productive of decided good On a post-mortem examination of several cattle laboring under this disease, I have invariably found the cartilages of the joints either ulcerated or almost completely destroyed, by the continual friction of the bones, in consequence of a diminishing secretion of synovia. All the internal organs seemed in healthy condition.

KEEPING SHEEP IN WINTER.—A writer in the Columbian Centinel, after stating that it is of the utmost importance to have sheep enter winter quarters in fine condition, observes—

As soon as sheep are brought into the yard, the different kinds of lambs, ewes and wethers, should be carefully separated, and kept during the winter apart. It is important that those in one yard should be as nearly of a size as practicable; for by doing so, there are no strong ones among them, to drive the weaker from their provender. All will feed alike and do well. The flocks ought likewise to be as small as we can conveniently make them. It is an invariable rule that a small flock does much better than a large one, even if both, according to their number, are fed equally well. If the flocks in each yard can be reduced to between fifty and one hundred, so much the better; and it is a great desideratum to make them as few as fifty, if it can in any way be effected. It is likewise necessary to have a separate yard for old and poor sheep, and if there are any in the flock that do not subsequently do well, they should be removed into what is commonly called the hospital. These hospital sheep, by being few in number, having a good warm shed, a sheaf of oats, or a few screenings from under the fanning mill, once a day, will soon begin to improve and do well. I have had my hospital sheep in a better condition, with this care, by spring, than any other flock; and I must say, that for the last three seasons, my sheep were in a better condition when I turned them out of my yard in the spring, than when I put them in at the beginning of winter.

Sheep ought to be rather sparingly than sumptuously fed, three times a day, out of racks, to prevent them from running over and trampling on the hay. As soon as one is seen in any of the flocks to become thin, it ought to be removed at once into the hospital, where it will be better fed. If you neglect to do this, soon will it be too late, and you will suffer loss, for a sheep once reduced to a certain point cannot be recovered. It is good to give them a feeding of straw, or pine tops, if you please; it invigorates their health, and makes a change in their food. They ought all to be daily watered; and if your hay has not been salted, they ought to have a lick of salt occasionally. By adopting these rules, you will save all your sheep; or you will not lose more of them than you would of the same number of horses and cattle. They will have no disease among them. I have often thought of an observation made to me by an experienced wool grower, from whom I asked for information of the disease of sheep: he answered, "What have you to do with the diseases of sheep? take care of them, and you will have no need for remedies." This observation struck me as strange, at the time, but subsequent experience has amply confirmed it.

And now, what will the farmer gain by keeping his sheep well? In the first place, he will gain in his hay—a fat sheep will not eat as much as a poor one; he will save all his grain—sheep in good condition do not require any. In the next place, he will save all his sheep—he will have more and better lambs in the spring, and in consequence of it, he will have several ounces of wool more to each sheep; and what is better than all the rest, he will in the end save himself loss and anxiety. The saving will at least be from one eighth to one fourth of the value of his flock, and all this by attending to a necessary work in due season.

SHEEP.—A very considerable portion of the land in New England is rough, stony, and hilly, and must remain in pasture or woodland in consequence of its being intractable to the plough. When such lands have been grazed by neat cattle or horses for a number of years, they become nearly worthless, and are often abandoned by their owners for the more fertile regions of the West. Some sheep-farmers, however, assert that pastures in which sheep have been kept for years in succession, have improved, and now yield more and better food than they did before sheep were admitted. It is to be feared that many tracts of land in New England will eventually be abandoned, unless some method is adopted to prevent their deterioration.

If the above premises are correct, it is very important, indeed indispensable, to the prosperity of New England, that sheep husbandry should become general. But, in order that it may become general, it must be made profitable; and none but the best breeds, for the purposes to which they are adapted, will be found advantageous for any other object than that of preserving the land from becoming barren in consequence of continued grazing.

Mr. John Lowell, in speaking of sheep, observed that "many questions which were once problematical, are now settled in favor of the Merino. It was doubted whether it would stand our climate—it does perfectly; whether its wool would not degenerate—it rather improves; whether its meat would be good for the table—it is as fine at least as any mutton we have; whether the wool could be exported to England and sell there at a fair price—it has been done, and met such a sale as would yield a much greater profit on Merino sheep than on the common sheep."—[American Almanac.]

HOG PENS.—Having had occasion, recently, to construct a hog pen, in which I believe there is at least one improvement, I will describe it for the benefit of my brother farmers, and the good of all pork eaters and pork makers in general—hoping and believing that for these my philanthropic efforts in the swinish cause, I shall, at least, receive a vote of thanks (an honor conferred on many others before me) from the innumerable hog multitude with which our country abounds.

The aforesaid hog pen is 21 feet long by 16 feet wide, with posts 8 feet long, which gives room for a chamber above, from which, by a board left loose for the purpose in the floor, the hogs can be fed with corn, and in the summer with potatoes, &c. that may be put away there, without much labor. Ten feet across one side is occupied with three pens,—and each pen has a yard in the rear (an indispensable I consider it) in which the raw material is manufactured into first rate manure. But what I consider the improvement is in first placing down the sleepers, then the floor, and then the sills on the top of the floor. Each pen is boarded inside as well as out; and here is the advantage, that notwithstanding the continual wet of a hog pen, and sills being above the floor, they are kept dry and free from decay.

The great difficulty with hog pens is that the sills rot so quick. By my plan a new floor can be laid, and I cannot see why my hog pen will not last as long as any other building.

The remaining part of it, not occupied by the pens, into which an external door opens, is occupied by a cauldron for cooking potatoes, &c. for my hog family, and by swill barrels, provender casks, and the usual et ceteras of a hog pen. The floor of the part not occupied by the hogs is 9 inches above the other part, which makes it dry, and affords a handy place to feed them. One corner of each of the 3 hog apartments is devoted exclusively for their lodging, which is constantly supplied with dry straw, to the no small comfort of my porkers, young and old.

If the above description shall conduce, in any small degree, to the better and more convenient construction of the hog pens of my brother farmers,—or to the comfort, and consequently to the growth and fattening of that very necessary appendage to a farm, short-nosed, short-eared, short-legged, and broad-backed swine—then my purpose will be fully answered.

FARMER C.

Bernardstown, Mass., Dec. 2, 1834.

TO MAKE CHEAP, LIGHT, AND WHOLESOME BREAD.—Take a dozen and a half of good sized mealy potatoes, well boiled; peel them and mash them fine while warm; add two quarts of cold water, and then strain the mixture through a cullender; add flour enough to make a thick batter; then a pint of good lively yeast or emptyings; if the yeast is sweet, no saleratus is necessary; if sour, a very little saleratus; let the sponge set until it is well fermented. With this sponge you may make a large or a small quantity of bread, by adding flour and water or milk; if a small quantity, it may be put into the oven very soon; if the quantity be large, it must stand longer, or over night. Put in double the usual quantity of salt, but no shortening. Let the dough stand in a place moderately warm, but not near the fire, unless it is to be baked immediately. Milk or warm water may be used, but water is the best, for the sponge mixed with water keeps sweet the longest. The bread will be very light, sweet and wholesome, having in it neither acids nor alkalies to neutralize each other. The greater the portion of potatoes, the lighter the bread will be; but if the proportion be very large, the bread will be so light as to dry up if kept several days.

Pastry boiled, such as for dumplings, &c. is far preferable if mixed with a large proportion of potatoes. Take a dozen good sized potatoes, mashed fine, knead flour sufficient to make the dough of a proper consistency with them while warm—add double quantity of salt, but no shortening. Put in the apples and boil about an hour and a half, or one third less than the usaal time for other pastry. Bread when very light also bakes sooner. So says our other half.—[Kennebec Journal.]

TO MAKE OLD BREAD NEW.—Bread that is several days old may be renewed so as to have all the freshness and lightness of new bread, by simply putting it into a common steamer over a fire, and steaming it half or three quarters of an hour. The vessel under the steamer, containing the water, should not be more than half full, otherwise the water may boil up into the steamer and wet the bread. After the bread is thus steamed, it should be taken out of the steamer, and wrapped loosely in a cloth, to dry and cool, and remain so two or three hours, when it will be ready to be cut and used. It will then be like cold new bread. By this process we may work such a change in old bread as will make it in all respects new, except in its deleterious qualities—and thus, at the same time, gratify the taste and subserve the purposes of health and economy. New bread, it is well known, cannot be eaten with perfect impunity, until it has undergone the process of ripening—and, indeed, physicians say it ought not, as a general rule, to be eaten till the day after it is made. A way is pointed out above by which a taste for new bread may be gratified, without exposure to injury.

We have received the above suggestions from an experienced housekeeper, who has often tried the experiment, and, to our knowledge, with complete success—and we publish it for the benefit of others.—[Springfield Gazette.]

AGRICULTURAL LYCEUMS, LEXINGTON, KY.—The following is an extract of a private letter from a gentleman now residing in Lexington, and well known in this section of the Union as an active friend of education.

Lexington is in the centre of a large and very wealthy farming county, no doubt the most beautiful, fertile, and wealthy districts in North America; and, what is most extraordinary, there are not six periodicals on agriculture taken from our post-office. In fact, after much inquiry, I cannot learn that any one, except the Hon. Henry Clay, takes any such periodical. The truth is, that farmers in this region have grown rich so easily, and their soil is so astonishingly fertile, never receiving a load of manure, that they have not felt the necessity of studying any improvements in their old established modes of operation. But that such an inquiring and experimenting interest might, and is now being, created in this section, there is no doubt. As an illustration, there are no less than four full blooded Arabian horses in this part of the state; several horses, which have cost from $5,000 to $8,000, and one purchased for $10,000, cash in hand, last spring, from Mr. Stevens, of Hoboken, N. J.; cows and bulls we have imported at vast expense from England. If my health will permit, and am not prevented by unexpected duties, I purpose to make efforts this fall and winter in establishing Agricultural Lyceums in this part of the State; but before I do this, I would be pleased to have a few spare odd numbers of the New-York Farmer, so that I might present a single number to each newly-formed association, as a specimen of your work, which I purpose to recommend for their public and private subscription.

ON A NEW METHOD OF WRITING ON ZINC FOR LABELLING PLANTS.—Mr. Henry Braconnot, the celebrated French chemist of Nantz, to whom we are indebted for the curious transformation of rags, and other similar vegetable substances, into starch, gum, and sugar, by the agency of the oil of vitriol, and whose name is well known to the chemical world for various researches connected with the analysis of vegetable substances, has given in the last number of the Annals de Chemie et de Physique, a preparation for writing on plates of zinc, to label plants. The writer having a dislike to painting in oil, which is often inconvenient, and never endures a long time, resolved to turn his attention to some other way, which would prove both ready and durable. The system of writing on zinc with a black crayon, which was accidentally discovered by M. Symon, an amateur at Brussels, and noticed in the *Revue horticole* for October, 1832, and the *Bon Jardinier* for 1833, possessing many imperfections, Mr. Braconnot was induced to try some experiments, being anxious to obtain a liquid, or a species of ink, which would be perfectly durable when exposed to the changeableness of the weather, and also one with which he could write with ease. This end, after several proofs, he believes he has obtained in a good measure. If it answer, he will have done both the botanists and amateurs a real service. The preparation is as follows: Take verdigris in powder, one part; sal ammoniac in powder, one part; lampblack, half a part; water, ten parts. Mix them in a glass or pot mortar, at first only adding as much water as will mix it well, then add the remainder of the water. When placed in a vessel, let it be well shaken up from time to time, and in a few days it will be fit for use. This is not only excellent for labelling plants, but also for marking objects it is wished to preserve, in low, wet situations, becoming quickly dry, and being very durable.—[English paper.]

ROT IN THE LARCH—ANNUAL GROWTH.—Mr. A. Gorrie has advanced, in the London Gardener's Magazine, the opinion that when the larch succeeds the Scotch pine, Pinus sylvestris, the rotting of the roots of the latter causes the decay of the former. He says,

Having been lately engaged in cutting down several acres of larch (interspersed with other forest trees,) of twenty-two and twenty-eight years' standing, I have retained specimens of a few that appeared diseased, sections of which I shall endeavor to describe. No. 1 is a transverse cutting of a larch tree planted by me in the spring of 1811; the section is made at about 1 ft. from the ground, and measures 1 ft. in diameter. The soil is strong black loam, about 14 in. deep, on a bottom of rotten whinstone or greenstone. The annular growth of the first four years from planting was 11 decimal parts of an inch each; in the year 1816, the annual layer of wood was increased to 26 decimal parts of an inch; in 1817, a wet, cold, and late season, the annual deposit measured 3 decimal parts of an inch; in 1818, it extended to 4 decimal parts of an inch. In 1819, during the vegetating season (that season commencing at the beginning of April, and terminating at the end of October,) 16 in. of rain fell at this place. I mention this circumstance, because it is well known that a scanty or a liberal supply of moisture during the growing season is invariably followed, in healthy-growing larch trees, by a corresponding deposit in width. This year, the annular layer of wood measured .5, or half an inch. The average fall of rain, during the vegetating season in 1820, 1821, and 1822, was 13 in. in each year; and the average annual deposit of wood for each of these years is .22 of an inch. In the year 1823, the rain that fell in the summer months amounted to 21 in.; the temperature was low throughout this season, and the crops were unusually late in being secured. The annular layer of wood in this year measures half an inch, In the year 1824 and 1825, the rain for the same period measured 13 in. in each year; and, in each of these years, the layer of wood measured 3 decimal parts of an inch. In 1826, the quantity of rain in the summer months was, it will be easily remembered, unusually small; only 7 in. fell during the vegetating season, and about other 7 in. in what are termed the dead months of the year. The annular layer of wood for this year only measures .2 of an inch.

During the vegetating season of four following years, the fall of rain averaged 18½ in. annually; and the annual deposits for each of these years averaged .37 of an inch. Hitherto all seems to have gone on well; and, up to 1830, the tree seems to have been in a healthy state: but, although the rains were moderate in 1831, 1832, and 1833, the annual deposit for each of these years measures only 14 decimal parts of an inch, giving reason to suppose that the tree had become infected with the disease in 1830. The rot appears to have commenced on the south and east sides of the tree, and to have spread irregularly in that direction between the annular layers of 1823 and 1832.

ROSE APPLE—JAMBOSA VULGARIS.—This, the rose apple, a native of the East Indies, is one of the commonest garden trees of Madeira; but there is scarcely another that combines so eminently the beauties of flower, fruit, and foliage. The flowers are large, handsome, of a very pale yellowish or greenish white, have a slight fragrance of primroses or cowslips, and are produced in tassel-like bunches, which contrast with the thick dark foliage, and enliven the trees from February to July or August, when the fruit is principally in season. The fullest bloom is in March or April; and, just after this, the trees are beautifully enriched by the fine cinnamon-colored or reddish young leaves or shoots. Nothing can exceed the loveliness and delicate appearance of the fruit; its rich clusters half-hidden by the dark thick turfs of foliage which clothe the outer branches. The fruit is a drupe-like berry, pear-shaped or subglobose, about 1 in. in diameter. Although one or two berries may be eaten with some relish, their overpowering perfume, and taste of rosewater, together with the want of juice, render the fruit generally unpalatable; and it is entirely excluded from the table or dessert, except to satisfy occasional curiosity. The fruit is produced in the greatest profusion; but used for no other purpose than sometimes to feed the pigs, which eat it greedily. The comprehensive figure published exhibits various stages of the plant's flowering and fruiting.—[Bot. Mag., Oct.]

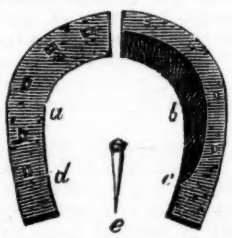
THE EXTREME FIBRILS OF THE ROOTS OF PLANTS, it has been asserted by Duhamel and others, die annually in the winter season, and are renovated in the spring in the same manner as leaves. Mr. Knight admits the position to be true in regard to the fibrils of bulb roots, but denies it in regard to the fibrils of the roots of trees. To ascertain the point, the Rev. P. Keith took up portions of the roots of different plants, chiefly trees, at different seasons of the winter, and, as a result, he concludes that "the root is never wholly denuded of its fibrils or spongioles, as the branches are denuded of their leaves. A partial decay, with a partial renovation, of these organs, seems to be occurring at all seasons; but a total denudation of the root occurs at no season. If, with Mr. Knight, we admit of a total denudation of bulbous roots, I think it will not go beyond such as are taken up out of the soil for the winter; for, if the bulb is allowed to remain in the earth, it is to be believed that new fibrils will have begun to be protruded before the old ones have finally decayed." Phil. Mag., third series, v. 211. Mr. Keith appears to have been the first to discover that vegetating roots do not receive their increments of length solely by the extreme points. Professor Lindley has since confirmed the experiments of Mr. Keith, which were made so long ago as 1819.—[Bot. Reg.]

LAYING OUT GARDENS.—A correspondent of the London Gardener's Magazine, writing on garden ornaments, thus speaks, after having labored long in making a rustic seat.

When the seat was finishing, and I sat down to observe the general effect of the little scene before it, I found, to my horror, that, besides seeing what I wished to see, the flowers, and the shrubs around them, an unlucky bend in a walk opposite let in a full view of an ill-looking office, which I thought I had effectually concealed; in short, that the termination of the miniature landscape was the ash-pit. What was to be done now? I could not find in my heart to take down the seat, which, with very little assistance, was the work of my own hands; and I was, of course, proud of it as a specimen of my industry, if not of my taste. I could have altered the turn of the walk, and have planted out the nuisance; but I wanted an immediate remedy, and the walk was most convenient in its present state. I therefore put up a rustic screen and doorway across the walk, which has contributed greatly towards the effect I wished to produce; and which, seen from the seat before mentioned, partly overrun with ivy, and partly concealed by shrubs, may be supposed the entrance to a summer-house or hermitage.

PATENT SPRING STAPLES.—These are designed to prevent horses from being injured when they become cast in a stable. They are so made with a spring, that the least struggling, when down on the floor, will cause the rope or chain to be disengaged from the staple. It is a simple and cheap article, and should be in every stable. Sold at 81 Barclay street.

DISTILLER'S SWILL FOR COWS.—Mr. Editor: A farmer informs me, that he one winter fed his cows on the swill from the distillery; and that the next winter he was surprised to find they could not eat the usual dry food given to cows by farmers. On examination, he found they had lost most of their teeth. He attributed the loss to the food of the previous winter. Will some of the readers of the New-York Farmer inform me if he is correct in his opinion? P.



IMPROVED HORSE SHOE.—The shoeing of horses is a business that requires experience, skill, and science. The accompanying drawing exhibits the upper and lower sides of the shoe.

This shoe, (says Loudon's Encyclopedia,) unites all the perfections of the modern English improvements, with some derived from our neighbors the French. What has since been called a *seated shoe* was introduced by Osmer; but from the obstinacy and ignorance of smiths, as it could not be brought into general use, it became little thought of, until revived by Clark of Edinburgh; by whom it was patronised and recommended. It finally was taken up by Moorcroft, and has ever since attracted some attention, and continues to be forged in some shops where the work is superiorly done; and where the employers have liberality enough to pay for such work, and judgment enough to discriminate between its advantages and those of the common shoe. If to this shoe were added the French mode of fastening it to the foot, we think the improvement would almost shut out all others. On examining the figure it will be seen that this shoe presents a flat surface opposed to the ground (*a*,) but a concave one towards the sole (*b*;) but that this concavity does not begin, as in some seated shoes, near the outer edge, but embraces two thirds only of the web, leaving by this means a sufficient surface for the crust: but this bevelling is not intended to reach the heels; it stops short of them (*c*,) leaving the web at this part plain for the heels to rest upon. The great advantages of this seating are, first, that as the crust rests on a flat surface instead of an inclined plane, as most of the common forged shoes present, so its position is maintained entire, and the inclination to contraction is in a great degree avoided. The nailing on of this shoe we would recommend to be after the French method, which consists in conical nail holes, punched with a square countersink (*d*,) into which are received conical nails (*e*;) which exactly fill up the countersink; by which means, so long as any part of the base of the nail remains, the shoe must be held firmly on; and which is not the only advantage gained, for the nail holes being obliquely formed, and at some distance from the outer rim, act less detrimentally on the crust of the foot.

To prepare the foot for the application of the shoe is also an important consideration. Avoid taking off more than one shoe at a time; otherwise the edges of the crust become broken away. Observe that the clinches are all carefully removed. Let the rough edges of the crust be rasped away; after which, the sole should be pared throughout until a strong pressure with the thumb can produce some yielding; too strong a sole tends to heat and contraction, too weak a one will not require paring. In this paring imitate the natural arch of the sole as much as possible. The line of concavity should not begin, as it usually is made to do, from the extreme margin of the foot, but should begin from the inner line of the crust only; by which means the crust, or outer wall of the hoof, will have a firm bearing on the flat surface of the shoe. Let no heated shoe be applied to correct the inequalities that may be left, unless it is for a moment, only to observe, but not burn them; but still more carefully avoid putting a plane shoe on an uneven foot. The portion of sole between the bars and quarters (*d*,) should be always pared out, as the surest preventive against corns. The heels also should be reduced to the general level of the foot, never allowing their hardness to serve as an excuse for being left; neither suffer the inner heel to be lowered more than the outer. After all the rest has been done, the frog should be so trimmed as to remain on an exact level with the returns of the heels, and no more. The custom of taking away the point or angle of the horny inflexions of the heels, under the false term of opening the heels, is to be carefully avoided. Let all these operations be performed with the drawing knife. The butteries should never be allowed to come near the foot of any horse, but the largest and coarsest of the cart breed.

OBITUARY—*Jordan Myrick.*—This notice, from the Southern Agriculturist, contains much that is interesting.

Mr. Editor: It is with extreme regret that we announce the death of Mr. Jordan Myrick; he finished his earthly career at Liberty, Bedford county, near the Virginia Springs, to which he had gone, in hopes of improving his health. He died on the 25th of September last, in the 48th year of his age. Let the deeds of "the just man made perfect" live after him, and let his bright example be a guide to those who follow.

Mr. Myrick was a native of Brunswick county, in Virginia. He there received a plain education, and was brought up by his father in agricultural pursuits. When about 17 years of age, a traveller from the South received welcome entertainment in his father's family, and in the course of the evening spoke of the overseers in the low country of South Carolina. He represented them as having the uncontrolled management of very extensive estates, about six months of the year, during which time it was impossible for the owner to inspect his proceedings and detect improprieties, That these people usually received from $400 to $600 per annum, and were at that time (with some exceptions of course,) from the opportunities and temptations to which they were exposed, generally indolent, profligate and knavish. The first thought that crossed the mind of Mr. Myrick, was this, "What an opening is here for an honest industrious man!" He determined to avail himself of it, and shortly after set out for this his field of action. He had an uncle of the name of Myrick, at that time an excellent manager at Dean Hall, now the property of William A. Carson, Esq. Directing his course there, he was well received and instructed in the outline of his system and discipline, during a few months of residence on the place. He was then employed at $100 per annum by the late Mr. David Deas, to superintend his planting interest at the Villa, on the eastern branch of Cooper river, then hired from the late Mrs. Horry, but now owned by Mr. John E. Bonneau. Mr. Myrick had then no money, two pair of shoes, and but one suit of clothes. He was, however, in good health and spirits—of indefatigable industry—with a mind of acute discernment, inquiring into and observing every thing that could promote his knowledge of planting and managing successfully. Besides the instruction and advice received from his uncle, who only lived six or eight miles off, Mr. Myrick was in the habit of conversing on these subjects with other experienced managers, and some judicious drivers of good character. Their frequent discordant opinions were commented on by his uncle, and reconciled, where possible, by reason and reflection, but generally subjected to his own experience and observation. Some squares of rice may have been injured by such experiments, but the result has been most happy for himself and his employers.

His chief or distinguishing excellence as a planter, was in the cultivation of rice—the accuracy with which he could discern the true state of the fields, with the proper time for flowing, &c. &c.; next his judicious, kind, but firm and efficient management of the negroes under his care; and lastly, his skill in constructing and repairing the banks of rice-fields. His reputation for these qualifications, added to his high character, for integrity and industry, soon brought his services into demand, and, at one time, he had the superintendence of thirteen plantations in the adjoining parishes of St. Thomas and St. John. These he managed successfully, by having an intelligent young man residing on each place, subject to his control. Some of these young men have since risen to high rank, and acquired considerable property as overseers of rice plantations.

Profitable employment soon made Mr. Myrick rich; and, in the year 1828, he was enabled to purchase the undivided half of a valuable rice plantation on the eastern branch of Cooper river, with thirty-three negroes. His portion of the rice land being 140 acres in the highest order for cultivation, and irrigated by tide-water. His share of sales from the Blessing Plantation, for the years 1829, '30, '31, '32, and '33, amounted to $25,120, or an average of $5,024 per annum. The number of barrels of rice sent to market in those five years was 1580, or an average of 316 barrels per annum, each exceeding 600 lbs. nett. All the rice was beat on toll, at ten per cent., so that the actual produce was 347 barrels each year, besides the small rice. He died clear of debt, leaving a property probably worth $40,000.

Mr. Myrick not only acquired wealth by the faithful and judicious discharge of his duties as overseer, but honor also. "On the 24th of February, 1824, a premium of a gold medal was presented to him by the Agricultural Society of South Carolina, for an uncommon product of rice from 20 acres of land." "And on the 22d of February, 1825, another premium, likewise, of a gold medal, was awarded to him, as manager of two or more plantations, having produced the most satisfactory testimonials of diligence, skill, good management, and humanity, given by the most respectable planters, by whom he was employed for twenty years." He likewise received from a Committee of this Society a letter, requesting that he would communicate to them his method of cultivating rice, which he promptly communicated, and which they published for the benefit of the community. On one plantation, Richmond, he increased the production from 180 barrels of rice, which it only afforded when he took the management, to the average crop of 500 barrels per annum.

Mr. Myrick also enjoyed the inestimable gratification of witnessing a great improvement in the morals, manners, and character of overseers in South Carolina generally, but especially on the rice plantations; and of having reason to believe, that this favorable change was influenced by his good example—in many cases by his instruction. Much emulation and rivalry was excited by his success; the usual produce of rice per acre increased at least one-fourth during his time, and his usual criterion of excellence in the character of an overseer was, "to raise as good crops as Myrick."

A SELECT DESCRIPTIVE LIST OF ORNAMENTAL TREES, SHRUBS, &c.—The season will soon commence when our readers will begin to ornament their grounds. Winter, or while there are no leaves on the trees, is the time to observe and determine where most ornamental plants are to be placed. The following list is from Kenrick's New American Orchardist.

I will here briefly enumerate or describe a few of the most ornamental hardy trees, shrubs, &c. Those sorts particularly which may be easily obtained, and at moderate prices: a just proportion of which are at this day considered indispensable appendages in every handsome garden.

In the disposition of trees and shrubs for avenues and the borders of walks, it is recommended to set them on either, or on both sides, in four ranks or ranges, according to their heights.

The first range, or that nearest to the avenue or walk, to consist of roses and shrubs of the lowest growth.

The second range to consist of shrubs, &c., which never attain to a greater height than from six to ten feet.

The third range, to consist of those trees which never attain to a very great height.

The fourth range, or outer rank, to consist of those trees only which attain to the greatest elevation.

Thus when the whole have attained to their full height, the effect will be not less striking than beautiful.

A broad and extended avenue, thus lined on both sides, with the ranks or ranges at proportionate distances asunder, and rising in regular gradation from the centre, as they will when fully grown, would present to the view of the beholder a spectacle rarely witnessed with us.

Those marked thus * are evergreens.
" " " ‡ will admit of frequent repetition.
" " " †† being very handsome, will admit of very frequent repetition.
" " " S. S. require protection in winter, in northern climates.

Class I.—Trees of the Tallest Growth, for the Fourth or Outer Range.

††Abele or Silver Leaf. *Populus alba.*—A tree of rapid growth, rising to a great height; the leaves are cordate, pointed, of a very dark green above, perfectly white and wooly or downy beneath. The petioles are slender, and like the aspen, are set in motion by every breath of wind; and the lively contrast of the upper and under surface gives the tree a striking appearance.

††Ailanthus or Tree of Heaven. *Ailanthus glandulosa.*—A tree from Japan or China, which there rises to an enormous height; with a small and very straight trunk; the leaves are pinnate, and from three to four feet in length. An elegant tree of extremely rapid growth. It answers well in the latitude of Boston. It is sometimes called *Tallou* or *Tillou.*

Ash. *Fraxinus excelsior.* — A fine stately tree, which rises to the height of sixty feet, with pinnate leaves.

‡Manna Ash. *F. rotundifolia.*—This tree grows very tall and stately, with pinnate leaves. Manna is procured from this variety. That which naturally exudes is called *tear* manna; but that which is obtained by incision, is called *canulated* or *flaky* manna.

Beech. *Fagus.*

The *F. ferruginea*, or American Beech, is a tree of very compact and handsome form, and is deemed a handsome tree.

‡Button Wood. *Platanus occidentalis.*—A tree which sometimes attains an enormous size. Its growth is very upright; its leaves very large and lobed. A noble tree for lawns and avenues, although its appearance is rather stiff.

††Catalpas. *Bignonia catalpa.* — A native of America; a large tree with a round head; the leaves are very large and cordate; of a bright green. The flowers are in very large clusters, of a white color touched with purple; they appear in July, and are very showy and beautiful.

Virginia Cherry.

††Horse Chesnut. *Æsculus hyppocastanum.*—A noble and extremely hardy tree, evidently from Northern Asia. It rises from fifty to sixty feet in elegant and compact proportion. The leaves are large, of a dark green, and the tree forms an impervious shade; the blossoms appear in May or June, they are in large clusters, of a white color mottled with red, and of a superb appearance. The fruit is large, inclosed in a prickly hull.

‡Cypress. We enumerate two varieties, 1st, *Deciduous Cypress*, (*Cupressus disticia,*) a native of the southern states, where it grows to an enormous size, very erect and stately, and bears the climate in the latitude of Boston. 2d, *White Cedar**‡, (*Cupressus thyoides,*) a tree which rises with a very straight trunk from seventy to eighty feet, the leaves are flattened and branching; a beautiful evergreen tree.

‡Elm, *Ulmus.—Scotch Elm, Wych Elm,* (*Ulmus montana.*) This variety has large leaves. The tree grows erect, and sometimes attains an enormous size. The bark assumes a black cast. The timber is very valuable.—*American Elm,* (*U. americana.*) The growth of this variety is somewhat irregular—it attains a very large size and height, and the branches droop like the willow. It rises sometimes to a hundred feet. — *Red Elm, Slippery Elm,* (*Ulmus rubra.*) Another handsome variety. —*Cork bark Elm,* (*U. suberosa.*) All these varieties are fine for avenues and lawns.

‡Lime or Linden. *Tilia.*—The European Linden rises in an elegant and pyramidal form; the American has a round head. The blossoms, though not showy, have a sweet odor. Both varieties are of rapid growth, and form fine shades for streets and lawns.

‡*Hemlock. *Pinus canadensis. Weeping Spruce.*—An elegant tree, and neglected for no other reason than because it is so common. The foliage is very delicate. It differs from most other evergreen trees, as the weeping willow from most deciduous trees.

‡Larch. *Pinus larix, Larix europea.* Sometimes called *Scotch Larch.* This is a noble tree of a pyramidal form; its branches are disposed in stages, and grow in a horizontal direction; it is of extremely rapid growth, will flourish in almost any soil, and resists the severest cold; a beautiful tree while in leaf; its timber is valuable and of great durability.

‡American Larch, or *Hacamatac, Pinus microcarpa.*—This tree is of a rapid growth, it attains to the height of forty feet. The tree is beautiful while in blossom and in leaf, and has a sweet odor.

Locust. *Robina pseudo acacia.* — A tall, beautiful tree, of very rapid growth, with pinnate leaves; the flowers are produced in racemes; they are white, and have a fragrant sweet odor. This tree, so valuable for its timber, is liable to the destructive attacks of a worm—and it has the demerit of throwing up innumerable suckers from its roots.

‡Honey Locust or Three Thorned Acacia. *Gleditschia triacanthos.*—A tree of rapid growth, which attains a stately size; a handsome tree with pinnate leaves; the seed pods are a foot or more in length. The tree is armed with triple or branching thorns, sometimes a foot long, of formidable appearance. A hedge, properly trained, would soon be impassable to man or beast. The stems should be allowed to rise six feet in height, when they must be checked in their advancement to force out lateral shoots.

††Magnolia, Blue Flowering. *M. acuminata.* —This tree is very hardy. It rises erect and in beautiful form to a great height in a congenial climate. The leaves are handsome, the flowers are of a blue color.

‡Scarlet Maple. *Acer rubrum.*—A large tree of a very handsome form; the leaves are cordate, lobed, dentate, downy beneath. The blossoms appear early in April; they are of rich crimson hue. The leaves in autumn change to beautiful deep crimson.

Sugar Maple. *Acer saccharinum.* — This is a tree of medium height; the leaves are large, three or five lobed; from its sap sugar is produced; a tree of utility and ornament.

*††White Pine. *Pinus strobus* or *Weymouth Pine.*—This tree rises to an enormous height, with a straight trunk; the leaves are very long and have a very delicate appearance. This tree, so majestic in its appearance, so beautiful, and yet so useful, contends with the oak as monarch of our forests.

*††Silver Fir. *Fir Balsam, Balm of Gilead. Pinus balsamea.*—A native of the Northern parts of America. An evergreen tree of a tall and elegant appearance: the leaves are dark green above and of a silvery hue beneath; a tree much admired for the beauty of its form and foliage.

*‡Spruce. *Pinus.* — The *Black Spruce, P. nigra,* and the *Red Spruce, P. rubra, Norway Spruce, P. abies,* are all ornamental varieties and deserving a place in every large garden. The branches of most of these varieties incline to grow horizontally.

††Sycamore. *Acer pseudo platanus.* — The tree grows tall and of elegant form; the leaves are very large, broad, of a dark green hue. A tree of ornament. 2d, *Striped leaved Sycamore. A.* fol. var. A variety with beautiful striped leaves.

††Tulip Tree. *Liriodendron tulipifera.* — A very majestic tree, which rises with a straight trunk to the height of eighty or a hundred feet. The leaves are large, of a singular form, of a bright green. The flowers appear in June, and much resemble the Tulip, of a greenish yellow, touched with red.

††Weeping Willow. *Salix babylonica.* Parasol.—A well known tree, rising to the height of forty or fifty feet; its branches drooping; one of the most elegant of all shade trees. Its outline when standing insulated is pleasing and very striking. The *Napoleon Weeping Willow* is the same, but is raised from the branches brought by Capt. Jacob Smith, of Rhode Island, from the tomb of Napoleon at St. Helena. 2d, *Golden Willow, S. vitellina,* a variety with bark of a gold color, which attains a stately size.

Class II.—Trees of Secondary Height, for the Third Range.

‡Acacia, Purple Flowering. *Robinia viscosa.* —A tree which never grows tall, the young wood is glutinous, the flowers are of a purple color and in large racemes.

‡Large Double Flowering Almond.

Apple.

‡Chinese Double Flowering.

‡Red Siberian Crab.

‡Yellow Siberian Crab.

‡Curled Leaved Ash. *F. atrovirens.*—A very curious and striking variety, a most singular tree. The growth is very upright; the young wood very thick and blunt; the leaves curled; of the darkest green shade. 6. *Golden Ash*‡, (*F. aurea.*) The bark of this singular variety is of a gold color.

Chinese Ash. *Fraxinus sinensis.*—An ornamental and singular variety—the leaves are small and very narrow, of a dark green shade.

Weeping Ash‡. *F. pendula.*—A variety with pendant branches; and very ornamental.

Purple Beech††. *F. purpurea.*—A tree remarkable for its leaves, which are of a dark crimson or purple hue, which appear to most advantage in June or July. In autumn they fade to purplish green.

‡‡Mountain Ash. *Sorbus aucuparia* or *Roan tree.*—A tree rising in an elegant and pyramidal form to the height of thirty feet. The tree itself is an ornament and its flowers, which are in large clusters. In autumn the tree is covered with large clusters of red berries, and its appearance at this time is very striking and beautiful.

*‡Red Cedar. *Juniperus virginica.*—This tree when properly trained makes an elegant hedge. By clipping, it grows remarkably compact.

‡Double Flowering Cherry.

S. S. ‡‡Franklinia. *Gordona pubescens.*—A tree growing from six feet to thirty in a congenial climate. Universally admired for its large and beautiful white flowers, with a yellow centre, and of extraordinary fragrance.

Hercules' Club. *Angelica tree. Aralia spinosa.*—A tree of low growth, of a singular aspect, the limbs are covered with stiff thorns. The flowers are in large bunches, and last a long time.

Judas Tree. *Cercis siliquastrum.*—A low tree, which produces its flowers very early, before the appearance of the leaf; it is at that time an ornamental variety.

Kentucky Coffee Tree or Bonduc. *Gymnocladus canadensis.*—A singular tree in its appearance; the young wood is remarkably stout and thick; the berries are said to be used as coffee.

‡‡Laburnum. *Cytissus laburnum, or Golden China.*—An elegant small tree, producing a profusion of long bunches of yellow flowers. There are two varieties, the common and the Alpine or Scotch; the latter is the most beautiful and is believed to be the hardiest.

‡‡Magnolia.—Of this splendid tree there are many varieties.

1st. *Chinese Purple Flowering*, (*Magnolia obovata,*) with flowers of a fine violet purple outside, and white within.

‡‡2d. *The Chandelier Magnolia* or *Yulan.* (*Magnolia conspicua.*) — Another Chinese variety, with large elegant white flowers, shaped like a chandelier.

‡‡3d. *The Magnolia cordata* or *Yellow Twice flowering.*—The flowers of this variety are yellow, it does not grow large.

‡‡4th. *Magnolia glauca;* for description see third section.

‡‡5th. *Splendid Magnolia macrophylla, large leaved.*—The leaves of this variety are over two feet in length. The blossoms very large, and of a yellowish white, very beautiful, with a fine odor.

‡‡*Magnolia purpurea.*—Highly spoken of by Mr. Loudon.

‡‡*Magnolia tripetala.* (*Umbrella Tree.*)—A tree which rises to a very moderate height, with very large leaves, and very large single flowers four inches in diameter, of a white color and fragrant odor.

S. S. *‡‡ *Great Flowering Magnolia.* (*M. grandiflora.*)—A tall, superb evergreen tree; rising in a congenial climate to the height of sixty or eighty feet; the leaves are oblong, of a shining green. The flowers are very large, of a fine fragrant odor. It does not bear a northern climate.

‡‡Mountain Snow Drop. *Chionanthus montana.*—This tree rises from ten to twelve feet in height; the leaves are oblong, broad, laurel shaped, of a blackish green; the flowers are in clusters, very singular, and white, like flakes of snow. Last of May and June.

‡Chinese Paper Mulberry. *Brousonetia papyrifera.*—A large tree with a round head; the leaves are large, rough, some are cordate, some entire, some five lobed. The fertile and barren blossoms are produced on different trees. This tree is of rapid growth, and ornamental.

‡‡Chinese Mulberry. *Morus multicaulis.*—A tree of rapid and upright growth; the leaves are very large and cordate; their upper surface is curled or convex, of a deep shining green, and very ornamental.

‡‡Osage Orange. *Maclura aurantiaca. Bowwood.*—A native of the Arkansas and Missouri, where it rises in beautiful proportion to the height of sixty feet, and has been pronounced one of the most beautiful of all our native trees. The leaves are oval and lanceolate, of a bright shining green; they resemble those of the orange, and the branches, like those of the orange, are covered with long thorns. The fruit is large, the size of an ostrich's egg, and of a curious and beautiful appearance, but not eatable. The wood is very fine, remarkably strong and elastic, and on this account is preferred by the Indians to all other wood for their bows. The wood yields a fine yellow dye, and it is supposed will be admirable for hedges. I know no material so beautiful and yet so hardy for this purpose. It deserves trial.

‡Peach. *Double Flowering Peach.*

‡‡*Weeping Peach.*

S. S. ‡‡Pride of India. *Melia azedarach.*—A tree from India or China, of very rapid growth, much used in the southern cities for ornamenting streets. The leaves are pinnate, of a deep shining green, and beautiful; the flowers are in large oblong clusters, of a bluish white or lilac, and of a fragrant odor.

‡Shepardia or *Buffalo Berry Tree*, (*silver leaved.*)

‡*Swedish Juniper. *Juniperus suecica.*—A hardy tree, which does not rise to a very great height. Its appearance is very singular when trained in a narrow pyramidal form by tying in the branches.

Black Willow. *Salix nigra.*—A low tree; the young wood of this variety is of a shining deep violet or black, and covered with a pale blue glaucous bloom.

‡Ring Willow. *Salix annularis.*—A very curious and singular tree, the leaves are curled in the form of a ring or hoop. Also called *Hoop willow.*

‡‡Venetian Sumach. *Rhus cotinus. Smoke tree. Purple Fringe Tree. Aaron's Beard. Jupiter's Beard.*—An elegant shrub or tree, rising from six to twelve feet, with a round head; the leaves are round, and have the odor of citron. The flowers are very striking, and have a beautiful appearance; they appear in June, are in large tufts of a purple color. In September and October they change and appear like masses of wool. One of the most beautiful shrubs; its appearance is very conspicuous and superb.

(*To be continued.*)

HUSSEY'S MACHINE FOR HARVESTING WHEAT.—At page 222, vol. vii. of the Farmer, we gave a description and drawing of this machine. They can be built in this city, by applying to the agents, H. Huxley & Co., 81 Barclay street. The following testimony, from the Genesee Farmer, is very favorable.

The machine has been very fully tried, and I am gratified to be able to say, that it has as fully succeeded. Hundreds of farmers, from the different towns of this and the adjoining counties, have witnessed its operations, and all have not only expressed their confidence in its success, but their gratification in the perfection of its work.

As every inquirer asks the same series of questions, I presume your readers will have a like course of thought, and wish for satisfaction in the same particulars. To give them this, I will write them in their order, and give the answers.

Does the machine make clean work?

It saves all the grain; to use the language of a gratified looker on, an old and experienced farmer, "it cheats the hogs."*

Does the machine expedite the work?

What the machine is capable of accomplishing, we who have used it can hardly say, as we had no field, in fit order, large enough for a fair trial through a whole day; and can only say what it has done. Five acres of heavy wheat on the Genesee flats were harvested in two hours and a quarter.

In what condition is the wheat left, and how is the work done, where the grain is lodged?

The machine leaves the wheat in gavels large enough for a sheaf, and where the grain stands well enough to make fair work with a cradle, it leaves the straw in as good condition to bind as the gavels of a good reaper. Whether the grain stands or is lodged is of little consequence, except as to the appearance of the sheaf, and the necessity of saving more straw, when lodged, than is desirable. The condition of the sheaf, when the grain is lodged, depends much upon the adroitness of the raker.

What number of hands, and what strength of team is necessary to manage the machine advantageously?

Two men, one to drive the team and the other to rake off the wheat, and two horses work the machine; but when the grain is heavy, or the land mellow, a change of horses is necessary, as the gait of the horses is too rapid to admit of a heavy draft. The horses go at the rate of four to five miles an hour, and when the growth of straw is not heavy, a fair trot of the team is not too much.

Is the machine liable to derangement and destruction from its own motion?

This is a question which cannot be so directly answered as the others. We have only used the machine to cut about fifty acres, and have had no trouble; judging from appearance so far, should say it was as little subject to this evil as any machinery whatever. The wear upon the cutting part being so little as to require not more than fifteen minutes sharpening in a day, there is no loss of time on this score.

Is the sheaf a good one to thresh?

The man who has fed the threshing machine with the grain of twenty acres cut by this machine, says the sheaves are much better than those of cradled grain, and quite as good as those of a reaper.

There is one more advantage beyond ordinary inquiries, of consequence, where so much grain is raised as in this valley; be the grain ever so ripe, there is no waste of grain by any agitation of the straw, and all the waste which can take place must arise from the handling and shaking in binding.

I am yours, &c.

WILLIAM C. DWIGHT.

Moscow, Liv. co., Nov. 14, 1834.

N. B.—The machine we used was intended only for upland; but by some little alterations and additions, we used it with equal facility on all kinds of soil; and it can be used on any farm so clean from stumps and stones as not to endanger the blocking of the wheels.

* The hogs are the gleaners in this section of country.

THE VALUE OF GREEN VEGETABLES AS MANURE was strikingly proved by me in the spring of 1833. I had a trench opened of sufficient length to receive six sets of potatoes; under three of these sets I placed green cabbage leaves, but the other three had nothing but the soil. When the crop was dug up, the plants over the cabbage leaves yielded about double the produce of the others.—[J. D. PARKS, Dartford Nursery, January, 1834.]

DISCOVERY OF SILVER ORE IN THE OURAL MOUNTAINS.—The Oural chain has been for several years well known to Europe for its rich gold and platina ores. A discovery has now been made of rich silver ore in two places. The first is seventy wersts from the foundry of Nischneitagilsk, near to the confluence of the little River Graesnoy with the Tagil, where gold also occurs; the other is twenty-two wersts from the foundry of Nischneitagilsk, on the little River Ulka.

DISSERTATION ON MAKING AND APPLYING MANURES.—The following practical article was presented to the Merimack Agricultural Society, by Mr. James Hale, of Alstead, and received the Society's premium

It has been observed by a writer on agriculture, that manure stands in the same relation to the farmer which a stock of goods, calculated to meet the market, does to the merchant. Whether the comparison is correct or not in every point of view, it cannot be denied that manure is an article of the greatest importance to the farmer. It is the intention of the writer to present to the public, in a plain and concise manner, for the aid of the practical farmer, as well as to excite investigation, a few ideas on the subject of making and applying manure.

Meking Manure. — This subject comprehends not only the best manner of saving and preserving the manure which is naturally made by a stock of cattle on a farm, but likewise the best method of increasing that quantity by the aid of other materials. The manure made in stables during the winter season should be cleanly thrown from the same every day and the stable floor well littered with straw or refuse hay. The litter, besides increasing the quantity of manure, conduces to the ease and health of the cattle, and increases both the quantity and quality of the milk of cows. The cattle in the winter should usually be confined in the farm-yard, and the cows at least should be yarded during the night in the summer season. It is said by practical farmers that three loads of manure, kept under a cover through the spring and summer, are worth four exposed to the air during that time.

The manure made by fatting hogs should be frequently cleaned from the hog house and placed in the yard adjoining, (no farmer should be without a hog-yard,) and the sty should be frequently replenished with plenty of straw or other litter.

But the thriving, economical, and scientific farmer will not depend solely on the preceding methods for his stock of manure; but, for the purpose of increasing the quantity of the same, will frequently make calculations resembling some or all of those which follow; and not only make, but actually put them in practice; for, give me leave to observe, the calculations alone will make very little manure.

The Farm Yard.—As soon as the haying and harvesting season is over, the farmer should commence collecting a large quantity of brakes, swamp grass, or coarse refuse grass of any description, and after having removed the manure from his barn-yard, spread the brakes, &c. over the whole surface of the yard. There is no danger of getting this covering of too great a depth. It should be suffered to remain in this situation till the next fall, when, together with the dung and urine of cattle with which it is mixed, it makes an excellent manure, and should be carted out and laid in large heaps, for the purpose of being placed in the hills of Indian corn or potatoes the ensuing spring. It is believed this is the most profitable method of making and applying such manure. If used the spring after it is made, it is not sufficiently rotted or decomposed to become the proper food of plants. It may be worth observing that the practice of covering the barn-yard with brakes is very beneficial to the cows kept in the yard during the fall season, and is equally as necessary as the stable litter in the winter. These weeds are very injurious to our pastures, and every cutting tends to destroy them.

The Hog-Yard.—With a little labor much valuable manure may be made in this enclosure. It is strong, rich and oily, and the fermentation of it proceeds slowly, consequently it affords more steady and durable nourishment to the plants to which it is applied than most other manures, and answers a good purpose when mixed with a large quantity of earthy or vegetable substances.

For the purpose of increasing the quantity of this manure, the farmer should deposit in his hog-yard, at every convenient opportunity, chip-dung, rich earth, weeds, leached ashes, leaves, moss, turf, and such other substances as his ingenuity may suggest; for no person should allow himself to be an entire book farmer, or servile imitator. That the mixture of the several ingredients may the more readily and efficiently be performed by the swine, a little corn or other grain should be sprinkled over the yard.

This is a good manure to enrich the exhausted soil of a garden, or to spread on land to be planted with Indian corn; but perhaps the best manner of applying it is to cart it out every spring, and place it in the hills of Indian corn or potatoes. If the crop be not a good one where this manure is used, we must look for the failure from some other cause than the want of an excellent manure.

The Compost Heap.—Manures combined of different materials, and of such other substances as are calculated to act upon each other by fermentation or otherwise, are eminently useful in increasing the fertility of soils, and promoting the growth of vegetables.

Select some convenient spot not far distant from the back part of the house, or near the barn yard, and cart or place thereon, not in layers, but judiciously mixed or shovelled together, such substances as the following, viz.: rich earth, such as may be obtained from ditches or the sides of the road, mud, or the dirt from hollows, which have received the wash from rich lands; marle, ashes, oily substances, soot, putrified flesh, (dead animals may be buried in the compost heap, if placed at such a depth as to prevent noxious effluvia,) woollen rags cut in small pieces, scrapings of the cellar and kitchen yard, of lanes and back yards after rains, rubbish of old chimneys, earth that has been long under cover, salt, old brine, blood, and soap suds. These should be frequently mixed together, and at each stirring much more common earth, or that which lies adjoining the heap, may be added. If this manure be designed for a cold, stiff, clayey soil, sand or dry sandy loam should be a principal ingredient; but if for open, light, sandy ground, clay should be added. It would be well to add to the heap some warm manure to promote its fermentation; sheep dung would be the best. Straw, refuse fodder, brakes, or any other such vegetables, would be better disposed of in the barn-yard than this heap. The making of such a heap causes an appearance of neatness to exist about the house and other buildings; and besides being a rich manure, the removing of so much rubbish to its proper place is conducive to the health of the occupants or inmates of the house.

This is a good manure to spread on tillage land, just before sowing it with wheat or any kind of grain and hay seed. It should be covered in the soil with the harrow. It will cause the grain to grow luxuriantly, and the land seldom fails of being well stocked with grass. It may be profitably applied to gardens, and as a top dressing to wet, cold mowing lands.

Peat Moss or Swamp Mud.—This is a substance which yields little or no nourishment to plants unless it be mixed with barn-yard or stable dung, or some kind of hot manure, to bring it into a state of fermentation; in this case the mixture may be used in the same manner and nearly to the same effect, "weight for weight, as barn-yard dung."

The cheapest and best manner of making this kind of compost manure is, when the barn-yard dung is carried into the field, early in the fall, a certain quantity, say one half, or even two-thirds of the heap, may be composed of swamp mud, which should be well mixed with the other manure. The whole mass at this time will undergo a strong fermentation, and become a good manure. Some practice carting swamp mud into the barn-yard; but in this case the two kinds of manure will not so well assimilate by fermentation, as when they are both moved at the same time and mixed together. The mud should be removed from the swamp, and left to dry some weeks before it is carried to the compost heap. I tried some of this compost in the hill for corn and potatoes, on a dry, warm soil; it consisted of nearly two-thirds mud; but with the corn, barn-yard dung had the advantage, though in this case the mixture was probably beneficial.

Application of Manure. — In addition to what has been before remarked on this subject, some further observations will be made, founded on information derived from my own experience, the best authors, and the most intelligent agriculturists.

Stable dung or animal manure ought to be spread on tillage land designed for corn or potatoes the spring after it is made, and well mixed with the soil, by the harrow first, and then the plough. This mixture of the dung and soil should be performed immediately after the manure is carried from the heap to the field. If the small heaps are suffered to remain in the field during fermentation, there is great loss of heat, of volatile, fluid, oily, and gaseous matter, by their dissipation in the atmosphere, which would, if the dung be speedily and properly buried in the ground, be communicated to the soil, thus securing to the plants the most nourishing properties, and the whole strength of the manure.

As it respects their speedy application, the same remarks apply to all kinds of manure, as well as to that of stable dung.

Some are of the opinion that stable and farm-yard manure ought always to be applied in a recent state, that is, previous to their rotting or decomposition. In this case the manure must be spread on the land as above directed, as new dung will not answer a good purpose to place in the hill for Indian corn; and it is not so good on most soils for the potato hill, as that which is somewhat decomposed and rotten. Barn-yard dung may be profitably applied, as before observed, in the hills of corn and potatoes; and if so applied, it should not be applied in a recent state.

With regard to the quantity of manure to be applied to an acre of tillage, many circum-

stances must be taken into consideration, such as the strength of the soil, the kind of grain or produce to be raised, (Indian corn requiring the largest quantity,) and the kind or quality of the manure to be applied. The farmer, in making his calculations on this point, should not apportion his manure to the quantity of ground he may wish to place under tillage; but should apportion his ground to the quantity of manure he can command. "Scanty dressings," as the term is, should ever be rejected. "We till too much land," is an expression in very common use; but instead of being a vague speculation of the brain, it should be reduced to the actual practice of the land.

In this application of manure, the quality of the soil and of the manure should be considered. A cold, stiff, clayey, or wet soil, requires a hot fermenting manure, and one not much decomposed, and that too in considerable quantity, that the cold nature of the soil may be corrected by the warmth of the dung; on the contrary, a dry, warm, sandy soil requires dung more decomposed and putrified, and a less quantity answers a good purpose. On such soils a compost of dung and peat moss, as before described, is a very suitable manure.

On the use and application of fossil manures, gypsum, lime, marle, clay, &c. much has been said by many writers on agriculture; but it is believed but little use has been made of their speculations, in this part of the country, except as it relates to the use of gypsum. Gypsum does not operate as an excessive stimulus to the soil, but as a direct food for the plants. It should be ground fine before application, "the finer the better:" it is then called Plaster of Paris. It is most beneficial to clover, and for this crop should be sowed in April, broad-cast, after the rate of four bushels to the acre. When applied to corn and potatoes, it should be put into the hill at the time of planting. Warm, dry, sandy soils, receive the most benefit by the use of plaster. Should the farmer wish to try an experiment with this manure, a little of it sown on such land, newly stocked with clover, will test its usefulness. If sown in a wet time, or just before a rain, the result is more perceptible, as it requires 500 times its weight of cold water to dissolve or decompose it.

Lime, as Sir H. Davy remarks, when slacked and exposed for some time to air, becomes combined with carbonic acid, and is then a useful ingredient in soils. Lime should never be mixed with stable or barn-yard dung, as it destroys much of their nutritive qualities. Rich loams abounding with vegetable matter, cold, boggy, swampy soils, are greatly improved by lime, as it accelerates putrefaction, and removes every thing noxious or hurtful for vegetation. A strong, clear, stony soil receives but little benefit by the application of lime. When applied, it should be spread and ploughed into the soil. Its greatest effect is on wheat. But the large quantity of this article necessary to make a perceptible improvement in the texture or fruitfulness of the soil, renders it too expensive a manure for the greatest number of our farmers. On this subject an English writer* observes, "The general allowance, in the estimation of experienced farmers, should be at least three or four hundred bushels an acre."

Burnt Clay is used as a manure by some farmers with great success. The nature of clay is entirely changed by the process of burning; its tenacity and cohesiveness is destroyed, and it is rendered dry, warm and friable, and its cohesive property cannot be restored by the application of water; hence it makes a good manure for all cold, wet, compact, and particularly clayey soils; and greatly improves such soils, to which in its natural state its application would have been detrimental. Ten or fifteen cart-loads is sufficient for an acre. It should be spread and mixed with the soil by the plough or harrow. It makes a good top dressing for such cold, wet grass lands as cannot be profitably brought into tillage by the plough.

Should the farmer, like the professional man, the merchant, and the ingenious mechanic, bring the reflecting powers of his mind to bear on his business and calling in life, and reduce to practice the theoretic investigations which would be the necessary result, a general system of neatness and order would exist about our dwellings, and our fields wear the appearance of luxuriousness and plenty.

LIMESTONE SOILS—GYPSUM.—Mr. Ruffin, in his Essay on Calcareous Manures, ascertained that all the poor and worn out soils in limestone districts contained little or no calcareous earth, carbonate of lime. He thus speaks of the operation of gypsum:

I do not pretend to explain the mode of operation by which gypsum produces its almost magic effects. There is no operation of nature less understood, or of which the cause or agent seems so totally disproportioned to the effect, as the enormous increase of vegetable growth from a very small quantity of gypsum, in circumstances favorable to its action. All other known manures, whatever may be the nature of their action, require to be applied in quantities very far exceeding any bulk of crop expected from their use. But one bushel of gypsum, spread over an acre of land fit for its action, may add more than twenty times its own weight to a single crop of clover.

However wonderful and inscrutable the fertilizing power of this manure may be, and admitting its cause as yet to be hidden, and entirely beyond our reach, still it is possible to show reasons why gypsum cannot act on many situations, where all experience has proved it to be worthless. If this only can be satisfactorily explained, it will remove much of the uncertainty as to the effects to be expected; and the farmer may thence learn on what soils he may hope for benefit from this manure—on what it will certainly be thrown away—and by what means the circumstances adverse to its action may be removed, and its efficacy secured. This is the explanation that I shall attempt.

If the vegetable acid which I have supposed to exist in what I have called acid soils, is not the oxalic (the particular acid in sorrel,) at least every vegetable acid, being composed of different proportions of the same elements, may easily change to any other, and all to the oxalic acid. This, of all bodies known by chemists, has the strongest attraction for lime, and will take it from any other acid which was before combined with it—and for that purpose the oxalic acid will let go any other earth or metal which it had before held in combination. Let us then observe what would be the effect of the known chemical action of these substances, on their meeting in soils. If oxalic acid was produced in any soil, its immediate effect would be to unite with its preparation of lime, if enough was in the soil in any combination whatever. If the lime was in such small quantity as to leave an excess of oxalic acid, that excess would seize on the other substances in the soil, in the order of their mutual attractive force; and one or more of such substances are always present, as magnesia, or more certainly iron and alumina. The soil then would not only contain some proportion of the oxalate of lime, but also the oxalate of either one or more of the other substances named. Let us suppose gypsum to be applied to this soil. This substance (sulphate of lime) is composed of sulphuric acid and lime. It is applied in a finely pulverized state, and in quantities from half a bushel to two bushels the acre—generally not more than one bushel.

As soon as the earth is made wet enough for any chemical decomposition to take place, the oxalic acid must let go its base of iron, or alumina, and seize upon and combine with the lime* that formed an ingredient of the gypsum. The sulphuric acid left free, will combine with the iron, or the alumina of the soil, forming copperas in the one case, and alum† in the other. The gypsum no longer exists—and surely no more satisfactory reason can be given why no effect from it should follow. The decomposition of the gypsum has served to form two or perhaps three other substances. One of them, oxalate of lime, I suppose to be highly valuable as a manure, but the very small quantity that could be formed out of one or even two bushels of gypsum, could have no more visible effect on a whole acre, than that small quantity of calcareous earth, or farm yard manure. The other substance certainly formed, copperas, is known to be a poison to soil and to plants; and alum, of which the formation would be doubtful, I believe is also hurtful. In such small quantities, however, the poison would be as little perceptible as the manure—and no apparent effect whatever could follow such an application of gypsum to an acid soil. So small a proportion of oxalic acid, or any oxalate, other than of lime, would suffice to decompose and destroy the gypsum, so that it would not amount to one part in twenty thousand of the soil.

Why gypsum sometimes acts as a manure on acid soils, when applied in large quantities for the space, is equally well explained by the same theory. If a handful or even a spoonful of gypsum is put on a space of six inches square, it would so much exceed in proportion all the oxalic acid that could speedily come in contact with it, that all would not be decomposed; and the part that continued to be gypsum, would show its peculiar power, perhaps long enough to improve one crop. But as tillage scattered these little collections more equally over the whole space; or even as re-

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* Author of the Complete Grazier.

* The Earl of Dundonald held an opposite opinion. He says, "the oxalate of lime may be decomposed by the vitriolic acid, in which case gypsum will be formed;" but we have the authority of Brande for the contrary: "Oxalate of ammonia added to any soluble compound of lime produces an insoluble oxalate of lime." Now, gypsum is a soluble compound of lime, and therefore the sulphuric (vitriolic) acid will be displaced. He further says, "Oxalate of lime may be formed by adding oxalic acid to any solution of lime."

† "Alum is a triple sulphate of alumina and potassa [potash.] Sulphate of alumina will not crystalize; but if a solution of potassa be added to a solution of sulphate of alumina, crystals of alum are precipitated."—[Brande's Manual of Chemistry.]

peated soaking rains allowed the extension of the attractive powers,—applications like these would also be destroyed, after a very short-lived and limited action.

Soils that are naturally calcareous, cannot contain oxalic acid combined with any other base than lime. Hence gypsum applied there, continues to be gypsum; and exerts its great fertilizing power, as in Loudon or Frederic [counties.] But even on these most suitable soils, this manure is said not to be certain and uniform in its effects; and, of course, more certain results are not to be looked for with us. I have not undertaken to explain its occasional failures, any more than its general success on the lands where it is profitably used,—but only why it cannot act at all, on lands of a different kind.

The same chemical action being supposed, explains why the power of profiting by gypsum should be awakened on acid soils after making them calcareous; and why that manure should seldom fail when applied mixed with very large quantities of calcareous earth.

Improvement of Neglected Lands.—In almost every town throughout our country, there are more or less farms and uncultivated lands that are considered of comparatively no value. But generally, they require nothing more than to fall into the right hands. The following is from the Report of the Middlesex Agricultural Society.

Captain Moore's Farm, in Concord, contains about sixty acres, nearly all of it low swamp and meadow land; in 1826, one or two acres only were thought worth cultivating and not more than one cow could be kept on the land. From 1830 to 1833, there were from 30 to 40 tons of English hay cut annually; during the winter of 1833 and '34, three horses and thirty-three head of cattle were wintered, and thirty-five tons of hay were sold. The method of reclaiming this land has been various: some of it by taking off the turf, and carting in gravel and sand, with a little manure and hayseed; some by covering the soil with gravel, and some by ploughing. Covering the soil with gravel is thought to be the best method, by Mr. Moore, taking the expense into consideration. Capt. Moore has not been able to make an estimate of the expense of reclaiming the whole, or one acre; but is fully of the opinion, that one or two crops will pay the labor of preparing the land. It now yields from 1½ to 3 tons of hay to the acre.

Mr. Rice's farm, Marlboro', is a light thin soil, composed of sand, loam and gravel, except the woodland and pasture. In 1804, when Mr. Rice commenced on this land, it stood in the reduced valuation of the town at $30; it now stands at $216, making an increase of about seven fold. The stock kept on the farm in 1804 was one horse, two cows and three sheep, with the assistance of the highway. The buildings were of little value, the dwelling house not a safe residence in storms,—not a rod of wall on the farm—nothing but rail and bush fences. The farm now keeps one horse, eighteen or twenty head of cattle, and a few sheep. The owner sells from 50 to 100 bushels of grain annually, and about 60 barrels of cider; and in the last 15 years he sold pork to the amount of $1,041, great quantities of turkies and poultry, and butter to the amount of $1,295, besides hay. There is now on the farm a new house and barn, shed and other out-buildings, in good repair; a good proportion of stone wall and substantial fence. The improvements on this farm have been made by collecting manure from the low land, and the banks of fields, that have been thrown out by the plough, from hedge-fences, that have been rotting for ages, and the sides of the highway: mixing these together and passing it through the cow and hog yards. By these means, the farm has received a new appearance, and turned from a barren waste into a fruitful field.

Mr. Asa Parker's farm, in Acton, contains 100 acres. The soil of the greatest part is loam and gravel, with a mixture of sand; most of the improved land is free from rocks, poor and light, and very easy to cultivate. Several acres are on a hill, of rich strong soil, covered with rocks, and bear large crops when cultivated. In 1824, the produce was six tons of English hay, and grain, potatoes, apples, &c. in like proportion. The buildings and fences out of repair. Now there are raised on the same land about thirty tons of English hay, 125 bushels of corn, 100 of oats, 30 of rye, 225 of potatoes. The two last seasons it wintered fifteen head of cattle and nine horses. There are 330 engrafted apple trees in a thriving state; 600 rods of wall, the rock mostly moved in the winter. Mr. Parker has made about 200 loads of compost manure yearly. He has subdued 16 acres of brush pasture by ploughing and hoeing, and now half a day's work will mow all his bushes. Eleven acres of new land, hard and rocky, have been brought into a state of cultivation, and produced two tons of English hay to the acre the first five years.

Grand Caillan, La. July 22, 1834.

The Egyptian Oat.—In the Southern Agriculturist for November last, I observe over the signature of 'A Highlander,' the following:

"A variety of oat having the hardiness of rye or wheat, which we might safely sow in October, is a great desideratum with us. Pray, Sir, if you or any of your correspondents know such a variety, inform us where seed can be obtained."

I have, for the last four years, sown what is in Louisiana and the Mississippi called the Egyptian oat. I find it succeeds well, sown any time in the fall; but it does best here put in from the 20th September to the middle of October; where it is put in early, and especially in a rich soil, care must be taken not to let it grow so large, as to joint before frost, by which it is killed after jointing. This is prevented by turning stock on it when the ground is not too wet. Care should also be taken not to suffer it to be grazed too close, leaving the roots bare, by which it is often killed by frost; if not killed, it is much injured. By proper care and attention, as above, the Egyptian oat, when sown early, will be found valuable for winter pasturage, and by taking off the stock by the first or middle of February, will make a good crop. If sown without any regard to the advantage to be derived from winter grazing, I should prefer about the 15th of November here, (a little south of New-Orleans,) and vary a little, according to climate. The Egyptian oat has a large grain, it is much heavier than the common kind. Should it be desirable, the oat crop will come off quite early enough to raise a pea crop afterwards. This is best done by breaking up the ground, then run a furrow crosswise four feet apart, and in this furrow, drill the pea (field or cow pea) and cover with a light harrow. When they get eight or ten inches high, plough them, and let hoes follow, and put a little dirt, and the crop is made.

The Egyptian oat, I believe, is cultivated to some extent in many parts of Mississippi, and, I believe, generally preferred to any other kind, and I expect could readily be obtained for seed at Natchez, or in its neighborhood.—[Southern Agriculturist.]

Wool Growers' Meeting.—The wool growers of Franklin county had a meeting at Shelburne Falls, Nov. 29th: Sylvester Maxwell, chairman; Urbane Hitchcock, clerk. A committee reported several resolutions, which were unanimously adopted. They resolved that the interest of the wool growers requires an effort on their part to guard themselves against the arts of speculation, which have been, and may again be, put in practice; that they approve of the transactions and resolves of a meeting lately held in Chesterfield, Hampshire county; that they are disposed to co-operate with individuals and public bodies in measures to obtain and diffuse the information necessary to protect themselves and the public against the selfish and intriguing, who would make themselves rich at the expense of the honest and laborious farmer; that the wool manufacturers can take no exceptions at these sentiments and measures, their prosperity depending much on the success of those who supply the raw material. The meeting chose Abel Williams, of Ashfield, George T. Davis, of Greenfield, Urbane Hitchcock, of Hawley, David Denison, of Colerain, and P. L. Cushman, of Bernardstown, a committee to correspond with committees of other bodies, and to collect and circulate such information respecting the value of wool as in their opinion shall be calculated to guard the growers against deception and imposition; and the committee are requested to call a meeting of the wool growers of Franklin county between this time and the first of May next.—[Hampshire Gazette.]

Product of Wool.—The Philadelphia Price Current estimates the crop of wool in the United States at seventy-five millions of pounds. We think this amount is much overrated. The Committee of the New-York Convention of 1831, to whom this subject was referred, estimated the crop of that year at fifty millions; and we then thought, from much personal information on the subject, that the estimate was sufficiently high—the number of sheep being put down at 20 millions. Now, at 2½ lbs. each, the number must be 30 millions, to yield 75 millions of pounds of wool.

If the latter be correct, how great is the value of the property vested in the growth of wool in the United States. At the rates calculated by the very intelligent committee just alluded to, the aggregate would stand thus—

30,000,000 sheep at $2 each, - -	$60,000,000
10,000,000 acres of land to feed them, at $10, - - - - -	*100,000,000
	$160,000,000
The capital then vested in the woollen manufactories was estimated at - - -	†40,000,000
Fixed capital, - - - - - - -	$200,000,000

The committee supposed that the whole number of persons employed in 1831, in the growth and manufacture of wool, the product of provisions and other branches of business directly dependent thereon, at 162,000; and that, the value of the manufacture being 40 millions, $24,750,000 of that sum passed into the hands of the agricultural population, for materials and supplies, and labor of all sorts, and profits earned by them.

We regard this as certain, that the growth and manufacture of wool in the United States has a greater value than the growth of cotton.—[Niles' Weekly Register.]

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*It is supposed that one acre of pretty good land is necessary for the feeding of three sheep throughout the year—and especially in the northern States, including New-York, where they most abound. The present number in the State, just named, is probably nearly 6,000,000. It was 3½ millions in 1825.

† And certainly has not increased since—and the persons directly employed by them at 50,000.

CONSEQUENCES OF INTEMPERANCE TO NATIONAL WELFARE.—The following is an extract from a report to the British Parliament of a select committee on drunkenness, its causes, &c. Although it may not be new to our readers, yet the reading of it may always be of service to every American.

1. That in a national point of view, as affecting the wealth, resources, strength, honor, and prosperity of the country, the consequences of intoxication and intemperate habits among the people are as destructive of the general welfare of the community as they are fatal to the happiness of individuals. Among others the following evils may be distinctly traced:

2. The destruction of an immense amount of wholesome and nutritious grain, given by a bountiful Providence for the food of man, which is now converted by distillation into a poison; the highest medical authorities, examined in great numbers before your committee, being uniform in their testimony that ardent spirits are absolutely poisonous to the human constitution; that in no case whatever are they necessary, or even useful to persons in health; that they are always in every case and to the smallest extent deleterious, pernicious, or destructive, according to the proportions in which they may be taken into the system; so that not only is an immense amount of human food destroyed whilst thousands are inadequately fed, but this food destroyed in such a manner as to injure greatly the agricultural producers themselves, for whose grain, but for this perverted and mistaken use of it, there would be more than twice the present demand for the use of the now scanty fed people, who would then have healthy appetites to consume, and improved means to purchase, nutriment for themselves and children, in grain as well as in all the other varied productions of the earth.

3. The loss of productive labor in every department of occupation, to the extent of at least one day in six throughout the kingdom (as testified by witnesses engaged in various manufacturing operations,) by which the wealth of the country, created as it is chiefly by labor, is retarded or suppressed to the extent of £1,000,000 out of every £6,000,000 that is produced, to say nothing of the constant derangement, imperfection, and destruction, in every agricultural and manufacturing process, occasioned by the intemperance and consequent unskilfulness, inattention, and neglect of those affected by intoxication, producing great injury to our domestic and foreign trade.

4. The extensive loss of property by sea, from shipwrecks, founderings, fires, and innumerable other accidents, many of which, according to the evidence of the most experienced shipowners, mercantile men, and others, examined by your committee, are clearly traceable to drunkenness in some of the parties employed in the navigation and charge of such vessels, whose vigilance, had they been sober, would have been sufficient safeguards against their occurrence.

5. The comparative inefficiency of the navy and army, in both of which, according to the testimony of eminent naval and military officers, examined by your committee on intemperance, it is a cankerworm that eats away its strength and its discipline to the core: it being proved beyond all question, that one sixth of the effective strength of the navy, and a much greater proportion of the army, is as much destroyed as if the men were slain in battle, by that most powerful ally of death—intoxicating drinks; and that the greater number of accidents occurring in both branches of the service, seven eighths of the sickness, invalidings, and discharges for incapacity, and nine tenths of all the acts of insubordination, and the fearful punishments and executions to which these give rise, are to be ascribed to drunkenness alone.

6. The injury to national reputation abroad by the intemperate habits of our soldiers and seamen, the excesses committed by them in foreign ports, where they form the largest class of British subjects usually met with, and from whose conduct erroneous and injurious impressions are formed of the character of the nation to which they belong, as testified by the evidence of shipmasters, merchants, and others, given before your committee, as well as the direct and immediate contamination and injury of sober races of men in new and uncivilized countries, visited for the first time by our ships, many of which leave no trace of their visit behind them but the vice of drunkenness, first introduced there by their crews.

7. The diminution of the physical power and longevity of a large portion of the British population by the destructive effects already described as produced on individuals, the loss of personal beauty, the decline of health, and the progressive decay of the bodily and mental powers; which evils are accumulative in the amount of injury they inflict, as intemperate parents, according to high medical testimony, give a taint to their offspring even before its birth, and the poisonous stream of ardent spirits is conveyed through the milk of the mother to the infant at the breast; so that the fountain of life through which nature supplies that pure and healthy nutriment of infancy is poisoned at its very source, and a diseased and vitiated appetite is thus created, which grows with its growth, and strengthens with its increasing weakness and decay.

8. The increase of pauperism in its most fearful shape, divested of that sense of shame which would disdain to receive relief, whilst honest industry could secure the humblest independence, and associated with a disregard of consequences, and a recklessness of all obligations domestic or social, which, according to the evidence of witnesses from the agricultural districts examined before your committee, has converted the pauper from a grateful receiver of aid under unavoidable calamity (which was once the general character of those receiving parish relief) to an idle and disorderly clamorer for the right of being sustained by the industry of others, or a profligate and licentious parent of illegitimate offspring.

9. The spread of crime in every shape and form, from theft, fraud, and prostitution in the young, to burnings, robberies, and more hardened offences in the old, by which the gaols and prisons, the hulks and convict transports, are filled with inmates, and an enormous mass of human beings, who under sober habits and moral training would be sources of wealth and strength to the country, are transformed, chiefly through the remote or immediate influence of intoxicating drinks, into excrescences of corruption and weakness, which must be cut off and cast away from the community to prevent the gangrenous contamination of its whole frame, leaving the body itself in a constant state of that inflammatory excitement which always produces exhaustion and weakness in the end, and thus causing the country to sacrifice every year a larger portion of blood and treasure than the most destructive wars occasion; the innocent population thus made criminal, being, like the grain subjected to distillation, converted from a wholesome source of strength and prosperity into a poisoned issue of weakness and decay.

10. The retardation of all improvement, inventive or industrial, civil or political, moral or religious, the hindering of education, the weakening of good example, and the creation of constant and increasing difficulties in the propagation of sound morality and sublime truths of the gospel, both at home and abroad, according to the testimony of teachers, pastors, and others, examined by your committee; the sum expended in intoxicating drinks in the city of Glasgow alone being stated by one of the witnesses from that neighborhood to be nearly equal to the whole amount expended on public institutions of charity and benevolence in the entire United Kingdom.

11. That the mere pecuniary loss to the nation from these several causes already enumerated, namely, the destruction of an immense amount of grain subjected to distillation, the abstraction of productive labor from the community, the property destroyed by sea and land, the diminished efficiency of the navy and army, the decrease and deterioration of the physical and mental powers of the population, the increase of pauperism, the spread of crime, and the retardation of improvement, caused by the excessive use of intoxicating drinks, may be fairly estimated at little short of £50,000,000 sterling per annum.

TELEGRAPH SCIENCE. — The increasing utility of this very interesting science has become a subject of considerable notoriety. From an authenticated statement of the annual reports of the establishment at the observatory on Central wharf, in this city, the following results are communicated for the information of its numerous patrons.

Vessels telegraphed from 1824 to 1825,	799
" 1825 to 1826,	897
" 1826 to 1827,	923
" 1827 to 1828,	1010
" 1828 to 1829,	1309
" 1829 to 1830,	1435
" 1830 to 1831,	1583
" 1831 to 1832,	1809
" 1832 to 1833,	1856
" 1833 to 1834,	1922
Total number announced by telegraph,	13,543

We understand that, during the above period, fifteen hundred sail of vessels, including the government vessels of war and the revenue cutters, have adopted the use of the telegraph flags.—[Scientific Tracts.]

FROGS.—On exposing frogs to the temperature of 0° cent. 32° Fahr., in humid air, in order to suppress perspiration by evaporation, they lost by transudation, in different experiments, the thirtieth part of their weight. Transudation is more abundant in these reptiles than in man, though the latter may be placed in circumstances much more favorable.—[Ibid.]

CUTTING DOWN WOODS.—Large quantities of wood are brought to this city from L. Island. The owners of wood-land have adopted the plan of cutting every 15 or 20 years. Six or eight years is too frequent—10 to 15 may be the most profitable.

An experienced agriculturist informs us that he considers it as an established fact, that the same forest land which produces sixty cords of wood per acre, when cut once in twenty years, would produce ninety cords, if the wood were cut three times during the same period. He thinks that the rapidity of the growth of wood depends much upon the frequency of cutting; and that wood land in general would yield a far greater profit, if cleared as often as once in six or eight years.—[Dedham Advertiser.]

KILN-DRYING WHEAT FLOUR.—The following important article is from the Baltimore Gazette.

"We have experienced much gratification through the politeness of our enterprising fellow citizen, Nathan Tyson, Esq., in a visit which we have made to Laurel Mills, of which that gentleman is the proprietor,—with the view of examining an improvement which he has adopted in the mode of kiln-drying wheat flour. We have derived so much pleasure from the investigation of this important subject, that we have determined to direct the attention of our readers to it, and we offer no apology for the length of our remarks, believing that our mercantile friends, to whom the subject cannot fail to be interesting, will be gratified with an account of it, however imperfect it may be.

"The apparatus consists of an arched brick chamber, containing two furnaces for burning anthracite, and two capacious cylinders of tin placed diagonally, through which the flour, when manufactured, passes at a temperature of about 220 degrees, [212 being the heat of boiling water.] The flour, thus losing a large portion of its moisture, is then conveyed into the packing room; and when cooled, packed for transportation.

"Notwithstanding the simplicity of this fixture, and the obvious improvement it makes in the keeping properties of the flour, it is somewhat singular, when every one who has reflected on this subject has admitted the necessity of some such contrivance, that it should not have been put in operation earlier. The present is the result of a series of experiments made by Mr. Tyson; and we are happy to say, has so fully answered his expectations as to induce him to obtain a patent for its construction.

"To the western country this improvement is of incalculable value; and will render it the granary of North America. With one of these simple fixtures, which can be attached at small expense to any flour mill in the country, the millers of western Pennsylvania and Ohio will be able to count with certainty upon their flour arriving at New-Orleans as sweet as when first made, and to insure its safety for an indefinite period of time in any climate.

"As we examined the noiseless movement of his efficient machine, and the clouds of vapor passing from it, we were forcibly impressed with a sense of its importance to the whole country; that in usefulness it will compare with the cotton gin of Whitney, or the spinning jenny of Arkwright; and that it will give a stability to the business on the Western waters which they could never have otherwise attained.

"It has been ascertained by experiment that flour manufactured in this manner has remained in Gibraltar two years perfectly sweet: that the unfavorable climate of Liberia has produced no impression upon it, proving sweet after remaining in store for upwards of twelve months; and that the same results have been ascertained in the West India Islands. Several cargoes have been shipped round Cape Horn, some parts of which have returned, and have been found in as good order as when first manufactured; and wherever the experiment has been tried, it has proved entirely successful, and *the flour produced* $1.50 *more than the flour of any other brand.*

☞"We cannot give a stronger evidence of the utility of this apparatus, and the rich harvest which the proprietor will realize from his discovery, than the opinion of one of our most respected and extensive merchants, whose judgment upon this subject will have great influence, not only here, but abroad, and with whose certificate we close our remarks.

"I do hereby certify that I have purchased from time to time a considerable quantity of *dried flour*, which I shipped to the West Indies and South America—say Brazils and round Cape Horn. That in every instance this flour kept perfectly sweet, and I believe it would keep sweet for years, in almost any climate.

"Signed, WM. PATTERSON.

"Baltimore, February 15, 1834."

TRANSFORMATION.—It is a common opinion in this country, particularly in the north, that if a horse's hair be put into the water of a spring or ditch, it will be in process of time transformed, first into a hair-worm, and afterwards into an eel. The deception, as in the instance of Kircher's snakes, arises from the close resemblance between a hair and the hair-worm, (*Gordius aquaticus*, Linn.,) and between this and a young eel. This fabled transformation of hair, which we have heard maintained, even by several persons of good education, is physically impossible and absurd.

The method laid down by Virgil in his Georgics for generating a swarm of bees is precisely of the same description as the snake recipe of Kircher; and though the "Episode of Aristæus recovering his bees" has been pronounced to be "perhaps the finest piece of poetry in the world," we must be permitted to say that it is quite fabulous and unphilosophical. The passage runs thus:

Oft from putrid gore of cattle slain
Bees have been bred. . . . A narrow place,
And for that use contracted, first they choose,
Then more contract it, in a narrower room,
Wall'd round, and cover'd with a low built roof,
And add four windows, of a slanting light
From the four winds. A bullock then is sought,
His horns just bending in their second year;
Him, much reluctant, with o'erpow'ring force,
They bind; his mouth and nostrils stop, and all
The avenues of respiration close;
And buffet him to death: his hide no wound
Receives; his batter'd entrails burst within.
Thus spent they leave him; and beneath his sides
Lay shreds of boughs, fresh lavender and thyme.
This, when soft zephyr's breeze first curls the wave,
And prattling swallows hang their nests on high.
Meanwhile the juices in the tender bones
Heated ferment; and, wond'rous to behold,
Small animals, in clusters thick, are seen,
Short of their legs at first: on filmy wings,
Humming, at length they rise; and more and more
Fan the thin air; 'til, numberless as drops
Pour'd down in rain from summer clouds, they fly.

[Trapp's Virgil, Georg. iv. 369.]

TO GIVE TO NEW CHEESE THE FLAVOR OF OLD.—If it be required to communicate to a new cheese the flavor and appearance of an old one, it may be done by the insertion in the new cheese of portions of the old one containing blue mould. The little scoop which is used in taking samples of cheese is a ready made means of performing the operation, by interchanging ten or a dozen of the rolls which it extracts, and placing them so as to disseminate the germ of the blue mould all over the cheese. A new Stilton cheese, treated in this way, and well covered up from the air for a few weeks, becomes thoroughly impregnated with the mould, and generally with a flavor hardly to be distinguished from the old one. I have sometimes treated half a Lancashire cheese in this way, and have left the other half in its natural state, and have been much amused with the remarks of my friend on the striking superiority of the English over the Scotch one.—[Agricultural Journal.]

PRESERVING CHEESE FROM WORMS AND MITES.—Grains of whole pepper, put into a vessel in which cheese is kept, will drive away the above mentioned insects.

TO TRAIN OXEN TO THE DRAUGHT.—Put a large broad strap round their necks; fasten one end of a cord to it, and the other to a large log of wood; permit the ox to drag it about as he feeds in the pasture, for three or four days before he is put to the yoke, by which his docility is much forwarded.—[Transactions of the Society of Arts.]

PULVERIZED MILK.—A statement has been communicated to the Medical Society, by Dr. O'Shaughnessy, of the great improvement which Mr. Previte has made in the preparation of pulverized milk.

"I have the pleasure to inform you that, after several experiments, very diligently and zealously performed by Mr. Previte, under my directions, a product has been obtained, which is by far the best substitute for milk yet devised, and which is altogether different in preparation and composition to the very objectionable compound to which I recently drew the attention of the society. The present preparation, a specimen of which I beg leave to submit to the society, is pure milk, in the dry state; its caseous matter retaining the property of solubility in water, with the exception of about five parts per cent. of the entire. The powder possesses the flavor of milk in full perfection, and imparts it to water, tea, coffee, &c. It makes excellent custards, puddings, and other culinary preparations in which milk is required. With tea, I should observe, that the color is inferior to that produced by milk or cream, although the flavor is quite as good. The *rationale* of the preparation is very simple. *Perfectly new milk* is evaporated at a certain temperature below that which renders the caseum insoluble, and during the evaporation the butter is removed. I scarcely deem it fair, however, to enter into more minute details, as it is but just that Mr. Previte should have some reward for the labor he has bestowed on the inquiry."—[Asiatic Journal.]

A NOBLE SENTIMENT.—The more I am acquainted with agricultural affairs, the better I am pleased with them; insomuch that I can nowhere find so great satisfaction as in those innocent and useful pursuits. In indulging these feelings I am led to reflect how much more delightful to an undebauched mind is the task of making improvements on the earth, than all the vain glory which can be acquired from ravaging it by the most uninterrupted career of conquests.—[Washington's Letters to Arthur Young.]

EMPLOYMENT OF TIME.—A person takes up some useful or agreeable book every morning at breakfast, and at the end of the year has spent agreeably, and we may say profitably, as many half hours as will come to nearly three weeks; another always takes up a Latin grammar, and a Janua Linguorum, in the same intervals, and at the end of the year has acquired a tolerable knowledge of Latin. Thus, you see, that whether a young man shall know two or three languages besides his mother tongue, and something of natural history and philosophy, may depend on the seeming trifling circumstance of how he spends the few spare minutes at the beginning and ending of his meals, from the age of fifteen to twenty-five.

VORACITY OF RATS.—The Aberdeen Herald relates the following remarkable instance of the grey or Norwegian rat. A farmer in the vicinity of Banff, on going out to look at his pigs, found the young of a sow, which had recently littered, with their throats gnawed through, and their bodies partly eaten, and some of them dragged into the holes of the rats, nearly a dozen of which ferocious animals were busily engaged in devouring the young pigs.

EXTRAORDINARY IMPROVEMENTS IN INDIAN RUBBER.—The singular properties of Caoutchouc, or Indian Rubber, which some few years since was used only for the insignificant purpose of rubbing out the pencil marks upon paper, is now being introduced not only into numerous varieties of articles of dress, but is likely to "save from adverse winds and waves the gallant British fleet." Experiments are now going on by order of the Admiralty on board his Majesty's ship Excellent, at Portsmouth, upon guns, breachings, &c., (which are quite satisfactory,) their elastic quality saving the jerk of the recoil of the gun. The experiments have been made, and are continuing with 68-pounder long guns, and 32-pounder carronades. For stoppers for cables, and preventing the dragging of the anchor, or the breaking of the cable and hawser ropes, it will be invaluable. For the invention, we are indebted to Mr. Seivier, whose various scientific acquirements are well known and appreciated. The importation of Caoutchouc now amounts to some hundred tons annually, and so great is the demand for that article, that some of the West India planters are planting their estates with the tree, (Havea guianensis,) which is a species of fig, in order that they may be prepared to meet the increased demand. The tree being carefully cultivated, of course will much improve the quality of the Caoutchouc. The manner in which the patent elastic rope is manufactured is by cutting the India rubber into long strands, and placing them strand and strand with the hemp yarn; they are thus twisted together: when finished, by the application of heat, the caoutchouc collapses, and, by that means, the rope is rendered elastic.—[English paper.]

ZINCOGRAPHY.—It was but a few years past that we had to record an advance in the fine arts in the invention of lithography, which afforded increased facilities in the art of engraving. Lithography is now, however, likely to be displaced, at any rate to a great degree, by the invention of an ingenious Frenchman. M. Breugnot, who has succeeded in preparing a composition of metal, the basis of which is zinc, upon which drawing and writing can be effected with equal, if not with greater facility, than upon stone, and as easily applied to paper with the same machinery. The art of zincography has several advantages over that of lithography; among others, in the portability and comparative cheapness of the plates, over the necessary bulkiness and cost of stone. These plates can even be adapted to a lady's portfolio, to any thickness, and to any size—a desideratum much wanted in lithography. The invention of zincography has received the sanction of the Royal Academy of Paris, and we understand that M. Breugnot has sold the patent for Great Britain to Mr. Chapman, of Cornhill, who feels confident that he shall be able to adapt this improvement to every department in the art of engraving. In Paris they have already succeeded in printing large window blinds with one plate, and we believe experiments have been made on silk and cotton, which warrant the supposition that zincography will soon be applied in our silk and cotton printing establishments.—[Lon. Morn. Herald.]

OYSTER LAMP.—M. de Lavage remarked, on opening an oyster, a shining bluish light, which, on nearer examination, he discovered to be phosphorus. On scooping it out of the shell, it extended nearly half an inch in length, and when immersed in water, seemed in every respect the same as artificially prepared phosphorus. The oyster in which this was discovered was perfectly alive and fresh. The light could not therefore proceed from any decomposition in the shell of the animal, but must have been derived from some other source. Upon examining this phosphorescent substance by the aid of a microscope of considerable power, it was found to consist of various animalculæ, each beautifully luminous, like miniature glow-worms, lighting up their starry lamps to illuminate the dark solitary chamber of the shell, and intended, perhaps, to lure within its reach such marine inhabitants as it might prey upon.

HERCULANEUM ORANGE.—On opening lately an Etruscan vase, taken from the ruins of Herculaneum, the learned Abbe Facciolate found an orange, pickled in vinegar, in perfect preservation; from which it appears that the ancient Romans made use of oranges as we do of gherkins.

DYING MAPLE OR SATIN WOOD.—Embellishing maple or satin wood with cochineal is an old Swedish practice. In that country, they use knotty pieces and roots of the birch, which they appear to plane with a plane that is not very sharp, so as to throw up the fibre more in some places than in others; they then dip these thin boards into dyes of various kinds, and as the raised fibres imbibe color faster than the smooth cut parts, a delicate variety of tint is easily produced. The boards, when dry, are smoothed and varnished, and make very beautiful furniture.

BEST PREPARATION OF BLACK LEAD FOR CLEANING STOVES.—Mix powder of black lead with a little common gin, or the dregs of red port wine, and lay it on the stove with a piece of linen rag; then with a clean, dry and close, but not hard brush, dipped in dried black lead powder, rub it to a beautiful brightness. This will be found to produce a much finer and brighter black varnish on the cast iron, than either boiling the black lead with small beer and soap, or mixing it with white of egg, &c., which are the methods commonly practised.—[Domestic Encyclopedia.]

TO PRESERVE THE TEETH.—It is said that washing the mouth every morning with common salt water will preserve the teeth and gums, sweeten the breath, and answer every purpose of the more costly dentifrices which genteel people are in the habit of using.

A TRIED RECIPE FOR BURNS.—Keep on hand a saturated solution of alum, (four ounces in a quart of hot water,) dip a cotton cloth in this solution and lay it immediately on the burn. As soon as it shall have become hot or dry, replace it by another, and thus continue the compress as often as it dries, which it will, at first, do very rapidly. The pain immediately ceases, and in twenty-four hours under this treatment the wound will be healed, especially if the solution be applied before the blisters are formed. The astringent and drying quality of the alum completely prevents them. The deepest burns, those caused by boiling water, drops of melted metal, phosphorus, gunpowder, fulminating powder, &c. have all been cured by this specific.

CHEAP MODE BY WHICH FARMERS AND OTHERS MAY MANUFACTURE CHARCOAL.—Provide a hollow cylindrical cast iron back log for the fireplace, not so long but that it may become heated throughout its length. One end may be permanently closed and the other covered with a cap. Drill small holes in it from one end to the other, about a line in diameter. Fill this back log with blocks of wood or chips, and put on the cap. When heated, the inflammable air and tar that issue from the holes will aid the fire. In defect of a cast iron log, a joint of stove pipe may answer temporarily.

STRAW HATS.—It is stated that in the town (or township) of Franklin, near Wrentham, Mass. containing a population of about 1,700 persons, the value of the straw hats manufactured by the females is between 75,000 and 80,000 dollars a year.

NEW VARIETIES OF GRAIN.—The Chevalier barley, mentioned p. —, appears to have been cultivated near Liskeard, and to have produced extraordinary crops of a very superior quality. The Egyptian wheat (Triticum compositum,) known in Mark Lane as Robinson's Fancy, of which a fine specimen was lately sent to us, has produced larger crops than usual this season.—[Loudon.]

MUD WALLS.—Mr. Loudon, in his Notes on Country Seats, observes, "Mr. Stanley assured us that, when built on good flint or brick foundations, and well thatched, with the eaves projecting so far as completely to throw off the rain, these walls will last for an unknown length of time. They are very common in Wiltshire, and make excellent farmyard as well as garden walls, and the warmest of all cottages. In our Encyc. of Architecture, § 838 to 843, will be found a detailed description of the mode of building cob walls in Devonshire, where houses two or three stories high are built in this way. This account was sent us by a clergyman, who states, as a proof of their great durability, that he was himself born in a cob parsonage, built in the time of Elizabeth. The Devonshire mode, and that practised in Wiltshire, appear to be exactly the same. The Cambridgeshire mode is different, and is also given in the work referred to, § 159. The French mode (pise,) which is more elaborate, will be found in our Architectural Magazine, vol. i., as applicable to one of the most economical designs for a group of four roadside cottages (by Mr. Wilds, surveyor, Hertford,) which we have anywhere seen. We would not, however, be understood as recommending cob, mud, or pise walls, either for cottages, or anything else, where brick or stone can be procured; but we should certainly prefer them to loghouses, as being safer from fire, warmer in winter, and cooler in summer."

ACTION OF TANNIN, AND SOME OTHER SUBSTANCES, ON THE ROOTS OF PLANTS. By M. Payen.—It has been repeatedly stated that trees soon die when the roots come into contact with the remains of the roots of oak trees cut down near them. This was supposed to be owing to the action of the tannin in the oak roots. M. Payen, after making a number of experiments on the subject, arrived at the following conclusions: 1st, Tannin, even in small quantity, acts deleteriously on the roots of certain plants: 2dly, Acids in small proportions are hurtful to germination: 3dly, Alkalies in small quantity are favorable to the progress of vegetation: 4thly, The neutralisation of the acidity developed during germination hastens its progress, and favors the ulterior developement of the plant. These experiments account for one of the useful effects of lime, or vegetable ashes, and of calcareous marl; and also for the unfavorable influence of alkalies used in too great quantity, or unequally distributed.—[Journal de Chimie Medicale, April, 1834, as quoted in the Lond. and Edin. Phil. Mag. for August, 1834.]

HORSES POISONED BY YEW.—Mr. Beeson, veterinary surgeon, of Amersham, being called to examine two very fine horses that had died suddenly without any apparent cause, discovered in the stomachs some portion of yew tree, which it seems the horses, having stood under the tree, had eagerly eaten. The poison was surprisingly rapid in its effects. They were three and five years old that died, and could not have been estimated at less than £50 or £55 the two.

There were no symptons of the kind observed before they fell; the driver says they went very well, and only staggered a few paces, dropped, and before the harness could be taken off they were dead. They died in about three hours after eating the yew. Cattle and sheep are equally affected by this poison.

LATE SOWING OF TURNIPS.—From the 29th of August to 2d of September, we sowed, in drills and broadcast, Dale's hybrid and red top turnips. A timely shower brought them all fully up by the 6th of September. The bone dust was mixed and fermented with some horse manure. The quantity was at the rate of about eighteen bushels per acre. Dale's hybrid received one hoeing and the others none. One row, on which there was no manure, did not grow near as fast as the others. The largest of the red top were the size of a goose's egg, and of Dale's not larger than a turkey's. We are of the impression, that if the ground had been made very rich, with horse and hog manure, there would have been nearly a full crop. A few ruta baga, sown at the same time, scarcely began to bottom when pulled on the 29th of November. It would seem, from this experiment, that the last of August is rather late for even the latest turnips.

TOP ONIONS.—One of the most profitable crops to which a farmer can appropriate a portion of his grounds, is top onions. Independent of the value of the bulb, or full-grown onion, the top onions will command from two to three and a half dollars per bushel.

CLIMATE FOR CATTLE.—Which is the more favorable for cattle, the humid atmosphere of Great Britain, or the more dry one of the United States?

TALLOW SCRAPS FOR HOGS.—Tallow chandlers take the scraps left from the strained tallow and fat portions of beeves, and put them into a box, holding two or three bushels. They are there pressed into a hard cake, six or ten inches thick and about two feet square. These cakes, which usually weigh upwards of 100 pounds, are sold at the rate of 80 cents per 100 lbs. Before fed to hogs the scraps must be broken into very small pieces, or, which is better, pounded; and then water is to be poured on them, and left standing two or three days. Hogs will fatten on this food; and we think it fully as cheap as any food that can be bought for them. If the scraps are fed out before they become soft and swollen, they will sicken the hogs—probably from swelling after being eat. For the want of the knowledge of this fact, we came near causing the death of six or eight hogs. Scraps alone we do not consider a very wholesome food: but mixed with starch water, or made into swill, with other substances, it makes a cheap and rich food for hogs. If fed to them within three weeks of the time of killing them, the flavor of the pork is injured.

HEATHS.—There are upwards of 500 species of heaths, Erica, and yet not one found a native of the whole continent of America. Far the greater portion are natives of the Cape of Good Hope.

FROZEN GROUND.—Whence is the additional moisture in the ground when thawing. Will any of the readers of the Farmer give the explanation? T.

FOWLS.—Mr. Fleet: Will your correspondent, D. F. Ames, inform a reader of your Farmer the most profitable kind of hens, and where they can probably be obtained?

Yours, L.

EVERY THING IN ITS PLACE AND AS IT SHOULD BE.—Most persons, farmers particularly, think if they had little more means or a little more time, they would have all things in order and as they should be. The fault, however, generally consists in the want of a proper decision and determination. Sometimes it will be necessary to adopt a new plan, to strike out a new course, or to make an overturning that will diminish the out-goes, and increase the incomes. No person need be afraid of changes that lead to well-matured plans.

VINEYARDS AND AGRICULTURE.—A square league laid out into fields, for culture, will employ and feed 1390 people—laid out in vineyards, 2604 persons can obtain a livelihood; and yet, vineyard districts are more thinly populated! Excessive drinking is considered the cause.

SILEX IN STRAW.—In the ashes of rye straw 70 parts of silex in the 100 have been found.

SNOW FAVORABLE TO PLANTS.—Among the benefits of snow to vegetation, some writers mention oxygen—it being found in abundance in snow.

BUCKWHEAT FOR FOWLS.—This grain, given to fowls, tends to make them lay. Rye, on the contrary, is supposed to have a different effect.

EGGS OF THE CODFISH.—It is estimated that the female carries in her ovary more than 9,000,000 of eggs. No wonder, therefore, that 20,000 fishermen do not cause this fish to disappear from the deep.

ON THE DISTINGUISHING CHARACTERS OF TREES, considered with regard to Landscape-Gardening.—If "a classification of the foliage of trees and shrubs" would be serviceable to the landscape gardener in Great Britain, it would be much more so in this country, where the foliage partakes of so great a variety of hues in the fall. The subject is an interesting one. The article is from Loudon's Magazine.

Your correspondent, "A Landscape Gardener," has well said, in your Magazine (IV. 475), that in planting, "the distinguishing character of trees should be well studied." Indeed, without this, whatever a man's pretensions may be to landscape-gardening, his works will present a thousand defects to the eye of the connoisseur, who expects in them harmony of design and striking effects.

In order to simplify and assist the young and inexperienced in this department of the art of gardening, would not a kind of classification of the foliage of trees and shrubs be of service, to point out to him the proportionate value of each, according to its situation, in ornamental scenery? The same question may also be asked with regard to the ramifications of trees; some of which, when in a state of maturity, and in their decline, are far more picturesque than others. Among our deciduous trees, of English growth, the "monarch of the wood," the oak, may, I think, claim the precedence, both for its foliage and ramifications; and, perhaps, the elm may be considered the next in which both are combined, though in a less degree of pictorial beauty. The Spanish or sweet chestnut claims high regard with respect to its foliage; whilst the lime, with its pendulous branches, forms a beautiful cone of lively green from the ground to its summit. The horse-chestnut, scattered here and there among other trees, produces a good effect, particularly when in bloom: as a lawn plant, it is too stiff and lumpish in its appearance, and should be but sparingly introduced; whilst the planes, both occidental and oriental, are valuable for the lawn, and equally so in masses mixed with other trees. The ash may, I think, be considered as possessing few claims for introduction into ornamental scenery, and therefore should be the less employed by the landscape-gardener; whilst the beech, in many instances, may be planted with advantage. The effects of the Lombardy poplar are so judiciously shadowed forth in this Magazine, by your correspondent Mr. J. Thompson (I. 16.), in an article well worth the attention of those who may wish to make use of this poplar advantageously, that I need not enlarge upon it; and the weeping willow, which is made the almost constant companion of the river, lake, and waterfall, will always be admired in proportion to its adaptation for the place assigned to it.

Among the resinous tribe, the Scotch pine and the cedar of Lebanon may be taken into primary account with regard to their ramifications; and the latter in its foliage is seldom if ever surpassed, particularly when it is planted in a soil congenial to its growth. In such cases it is seen towering up to the height of sixty or seventy feet, and stands unrivalled upon a lawn, or in any situation favorable for allowing it to feather itself down to the ground. The silver fir has a similar claim to the notice of the planter, as has also the spruce; and the latter may be planted occasionally as skirtings on the lawn side of plantations or shrubberies, with more freedom than the former, on account of the diversified appearance of its fronds, which on different trees is often remarkable, and produces a pleasing effect. In speaking of the larch, I think it may be recommended to be planted in groups among trees of various kinds, but more particularly among large masses of the other kinds of fir, where, by its enlivening green, particularly in the spring, it will greatly relieve the sombre appearance natural to that tribe. The Weymouth pine, much as it may, perhaps, be admired by some, is generally of too short a duration to be recommended as worthy of much consideration by landscape-gardeners; and, even where it lives long, it does not retain enough of beauty to render it desirable.

I might in this way proceed to give hasty notices of many other kinds of trees, and also of the vast variety of shrubs, both deciduous and evergreen, which are now cultivated for the sake of ornament; but I feel I am treading upon hallowed ground. I am even doubtful if my lucubrations on the subject would be possessed of a sufficient degree of merit to render them serviceable; and it is well if I have not already committed myself. I therefore decline pursuing the subject any farther, hoping that others of acknowledged taste and judgment may feel inclined to give it their attention; and that, through the medium of your Magazine, we may see the result of their considerations upon it.

The specific object which I have in view is, to give to the inexperienced young gardener a kind of outline whereby he may proceed upon safe ground in disposing of trees and shrubs according to their relative value, so as to produce the best effects that local circumstances may admit of, either for the park or pleasure-ground. To elucidate the subject, skeleton plans might be given, and numbered with references descriptive of the tree or shrub to be planted, and if singly or in masses; to which might be added remarks upon the lights and shades that would be produced by the different tints, projections, indentations, &c., in a lengthened plantation, planted either in partial masses of one sort of tree, or otherwise. Distances might also be taken into the account, showing the effect that would be produced by various kinds of trees and shrubs from different points of sight. The ingenious designer might first sketch the outline, in his plan, of the building and water which may be supposed to exist

together with the bridges, temples, ruins, lodges, &c., in contemplation to be erected. Hills, also, and undulating ground, might be sketched in, agreeably to his fancy; as well as other things that might be suggested by way of usefulness or embellishment.

Perhaps some of your readers may think that enough has already been written upon this subject to lead any person of mind sufficiently into it. That there has been a great deal written, and well written too, on landscape-gardening, cannot be doubted; but I do doubt if there are many young men among your readers who can have access to such publications; and, with the exception of what is given in your Encyclopædia of Gardening, and the papers that have occasionally appeared in your Magazine, numbers of them may not have read a page upon the subject. Besides, this, like most other subjects, is capable of farther developement, and is well calculated to call into play the slumbering talents of many who may not now be conscious of the powers they possess. I should be really glad to see this subject entered into fully by some of your intelligent correspondents. It opens a wide field for the exercise and display of talent; and as it may be considered the highest branch in the art of gardening, it would reflect credit upon those who might favor you with designs and the necessary accompaniments of references and explanations, with such observations as they might think proper to offer thereon. A farther progress in the art would be thus accelerated, while the mind would be employed in one of the most delightful exercises that nature has afforded to man.

Permit me to add, that your Magazine, being a periodical, is well adapted for the reception of articles of merit in this interesting branch of gardening; as, by occasional essays, that perpetual stimulus will be kept up which is necessary to the perfection of every art; and notices of its progress must be highly beneficial to all those who need instruction.

T. Rutger.

Shortgrove, Essex, Jan. 1834.

Of Insects, their destruction, &c.—In this department, insects begin to increase by hundreds, and too frequently their ravages are very obvious before their progress is arrested. We will treat of those which are most common, under their respective heads, with their nature and cure, as far as has come under our observation.

Aphis rosæ, of the natural order of Hemiptera, or what is commonly known by green fly, green lice, &c. infect plants in general, and are particularly destructive in the hot-house to Hibiscus rosa-sinensis, Asclepias, Crassula coccinea, Alstræmeria, and many other plants of a free growing nature. They attack the young and tender shoots at the point, leaving a dark filthy appearance on the foliage. Many remedies for their destruction have been offered to the public by various writers, each equally secure in his own opinion. Extensive practice alone can show the most easy and effectual cure. Fumigating with tobacco is decidedly the most efficacious, and in the power of any to perform. Take a small circular furnace, made of sheet iron, diameter at top twelve inches, and at bottom eight, depth one foot, having a grating in it to reach within three inches of the bottom, which will leave space for the air to pass, and where the ashes will fall and be kept in safety, having a handle like a pail to carry it with. This, or any thing similar, being ready, put in it a few embers of ignited charcoal; take it into the centre of the house, and put on the coals a quantity of moist tobacco stems. If they attempt to blaze or flame, sprinkle a little water over them; and as they consume, continue to add tobacco until the house is entirely full of smoke, observing always to do it in still, cloudy weather, or in the evening. If it is windy, the smoke is carried off without having half the effect, and requires more tobacco. The house must be closely shut up. There are several plants whose foliage is of a soft downy nature, such as Helitropiums, Callacarpas, Salvias, and many of the Lantanas, Vincas, with several others, that cannot stand, without danger, strong fumigation. These should be put low down in the house, or under the stage. These fumigations will have to be repeated frequently, the time for which will easily be perceived; and, when required, ought not to be delayed. Several species and varieties of the same genus, Aphis, can be destroyed in the like manner.

Acaris tellurius, or red spider, is caused by a dry atmosphere, and its havoc generally is obvious before it is arrested. With its proboscis, it wounds the fine capillary vessels; and if the leaves are fine, they will appear as if prooed with a needle, and yellowish around the wound. If they have farther progressed in their destructive work, the leaves will prematurely decay. On this appearance, turn up the leaf, and you will see them running about with incredible swiftness. Their body is of a blood color, and their feet, eight in number, light red. When very numerous, they work thick webs on the under side of the leaf, and frequently all over it, forming a mass of half dead plants, decayed leaves, and thousands of spiders. The most effectual remedy is a thorough syringing with water, and profusely under the foliage. It is being done every evening, will subdue and eventually banish them. Had the house been syringed two or three times per week, these intruders would not have appeared. It is said by some writers, that watering only reduces them to a temporary state of inaction, and will not destroy them. Laying aside the many prescribed nostrums, we assert that the pure element is the most effectual cure, as well as the most easy to be obtained.

Thrips, order Hemiptera, are insects so minute as scarcely to be perceptible to the naked eye. They generally lurk close to the veins of the leaves of plants, and frequently attack esculents. When viewed through a glass, they are seen, when touched, to skip with great agility. The larva is of a high brown, or reddish color. The thrip has four wings, and walks with its body turned upwards. It frequently attacks the extremities of tender shoots, or young leaves, which become shrivelled, brown, and will rub to dust easily between the thumb and finger. When any leaves or shoots are perceived to be so, if you do not observe the green fly, expect the thrips. They may be destroyed by a fumigation of tobacco, in the same manner as the green fly. By the simple and expeditious method of fumigation, these insects and several others may be destroyed effectually at any time they appear.

Cocus hesperidus, or mealy bug, has appeared in the hot-houses about Philadelphia within these few years, and, if not instantly destroyed, increases rapidly. It is of a white dusty color, when broken, of a brownish red, generally covered with down, under which it deposites its eggs; and they, in a few months, come forth in great numbers. The cocus generally is of a dormant nature; but, in warm weather, they may be seen moving rapidly up the stems of the plants. Fumigating has no observable effect on these insects; therefore, as soon as they appear, recourse must be had to other means. The liquid made from the following receipt is death to any of the Cocus tribe: Take two pounds of strong soap, one pound flour of sulphur, one pound of leaf tobacco, one and a half ounce of nux vomica, with a table spoonful of turpentine, which boil in four gallons of river water to three; then set aside to cool. When boiling, stir it well with a stick, continuing to do so until it is reduced as above. In this liquor immerse the whole plant, drawing it to and fro gently, that the liquor may penetrate every where. This done, lay the plant on its side, until it begin to dry, then syringe well with clean water, and put it in its respective station. Where a collection of plants is free from any insects of the kind, every plant that is introduced ought to be minutely scrutinized, that the unclean may be kept from the clean: the above insect will feed almost on any plant, but indulges on Crassulas, any of the bristly Cactus, Gardenias, and, in fact, whatever is in the way.

Cocus ——, or brown scaly insect, is frequently found on many plants, but we never could perceive that it does any other material injury than dirtying them. We have always observed, that it is found in winter to abound most in those situations which are most excluded from air; therefore is of less importance than the other species, which eat and corrode the leaves of tender plants. A washing with strong soap suds will destroy them, or the above liquid will do it more effectually. Tie a piece of sponge on the end of a small stick, and scrub every leaf, stem, and crevice. Fumigating destroys the larvæ of this species.

Cocus ——, or small white scaly insect, which generally infests Cycas revoluta and circinalis, the varieties of Nerium oleander, Oleas, and several species of Acacias, may be destroyed by washing, as above, with a sponge, and a strong decoction of tobacco, using the liquid about the warmth of 100°. Being thus heated, it irritates the insect, when, by easing itself from its bed, the fluid passes under it, and causes immediate death. If it is not thus irritated, it adheres so closely to the foliage, that it will keep you at defiance. The under or dark side of the leaves is its residence; and we have observed a plant in a house where there was only light on one side, with the dark side literally covered, while the light side was clean. So much for having houses with plenty of light. The effects of this insect are of a corroding nature, extracting all the juices from the leaf under it, even straining to the other side; and where they have got to the extremity, the foliage is completely yellow, and of a decayed appearance.

Cocus ——, or turtle insect. We have never observed this insect arrive to any extent, but think that the Datura arborea is most infested with it. It is the largest of any genus known amongst us, and very like a turtle in miniature. On lifting it from the wood, to which it generally adheres, there appear to be hundreds of eggs under it, but fumigating completely destroys the larvæ. In our opinion, this turtle insect is no other than the old female of the brown scaly insect, which swells to a large size before depositing its eggs. We have frequently observed the insect dead in this enlarged state, and question if this is the last stage of its transmigration. The male insect is winged, and very active in its movements.—[Flower Garden Directory.]

Blasting Rocks.—As many lives are yearly lost by the untimely explosion of the powder used for blasting rocks, humanity prompts us to give a process as we heard it described a few days since, by a person who had been injured in a mine where many accidents of the kind had happened, which led them to try other methods of charging the rocks than those commonly practised, and which he said ended in the discovery of a safe and expeditious manner of blasting. As these accidents had uniformly happened in what he denominated the "tamping" or driving down the brick and other substances used in filling above the powder, they, for an experiment, substituted plaster of Paris, which had been heated, as for preparing cement, which they mixed with water in the same manner, and poured the cement into the hole upon the powder, having first introduced the quill or fuze; the cement immediately set or hardened, when the blast was ready for firing. He said that he never knew a blast managed in this way to fail of doing well, and never knew an accident happen; that it was quicker done, and was more economical in every respect. If this should prove correct, it should be generally introduced.—[Gen. Farmer.]

Steamboats on the Western Waters.

In a publication made by the writer of this article in 1829, on the interesting subject of steamboats, it was calculated, that from the time of their first introduction on the western waters in 1811, until that period, their number amounted to about three hundred and twenty-three. Their united tonnage was estimated at fifty-six thousand tons. From the best data which could be procured from the most intelligent sources, the original cost of these boats was five millions six hundred thousand dollars, and the repairs on the same number, assuming that none of them would last longer than 1832, was set down at two millions eight hundred thousand dollars. Now, although there were five or six boats built between the years 1811 and 1817, the latter period may be assumed as the epoch of their regular and successful introduction; in 1825 they were brought to their present state of perfection. It results, then, that the amount expended for the building and repairing of steamboats, in a period of about eleven years, was equal to eight millions four hundred thousand dollars. As the number of steamboats was increasing annually, no fixed amount can easily be assumed for the yearly expenses; but for the year 1829, the sum was fixed at two millions five hundred thousand dollars; if, then, five hundred thousand dollars be considered as a fair yearly average from 1818, the total amount of money expended on the shores of the western waters, up to 1829, inclusive, will be little short of fourteen millions of dollars. When it is considered that this circulation and expenditure of money was exclusively created by the introduction of the steamboat, the importance of this invention to the valley of the Mississippi may be conceived. It has produced an advance of prosperity that would have required more than a century to have realized in the ordinary progress of human affairs; it has produced a revolution in business little inferior in importance to that which followed the discovery of the art of printing.

On the 1st of January, 1824, an official list of steamboats, from an authentic source, gives the whole number of two hundred and thirty, whose aggregate amount of tonnage is equal to about thirty-nine thousand tons. Allowing the cost of building at a rate much lower than the rule adopted three years since, the capital now invested in this stock will exceed three millions of dollars. The expense of running may be put down nearly as contained in the following scale:

60 boats over 200 tons, 180 running days, at $140 per day, - -	$1,512,000 00
70 boats from 120 tons to 200, 240 running days, $90 per day, - - - -	512,000 00
100 boats under 120 tons, 270 running days, $60 per day,	1,620,000 00
Total yearly expense,	4,644,000 00

This sum may be reduced to the different items producing it, in the following proportions, viz.:

For wages, 36 per cent., =	$1,671,840 00
Wood, 30 per cent. - -	1,393,200 00
Provisions, 18 per cent. -	835,920 00
Contingencies, 16 per cent.	743,040 00

This result is truly striking to those who were accustomed to the state of things on our rivers within twenty years. The difference in the amount of wages paid is in itself very considerable; but the item of fuel is one created exclusively by steamboats; and when it is considered that nearly one million and a half is expended every year at a few points on the Mississippi valley, it presents a vast field for speculation. The immense forests of beech and other timber, unfit for agricultural purposes, were, before, not only useless, but an obstacle to the rugged farmer, who had to remove them before he could sow and reap. The steamboat, with something like magical influence, has converted them into objects of rapidly increasing value. He no longer looks with despondence on the denseness of the trees, and only regrets that so many have already been given to the flames, or cast on the bosom of the stream before him.

At the present period, the steamboats may be considered as plying as follows, viz.:

25, over 200 tons, between Louisville, New-Orleans, and Cincinnati, meas'g	8484 tons.
7 between Nashville and New-Orleans, - - - - - -	2585 do.
4 between Florence and New-Orleans, - - - - -	1617 do.
4 in the St. Louis trade, - -	1002 do.
7 in the cotton trade, - -	2116 do.
57 boats not in established trades, from 120 to 200 tons, - -	8641 do.
The balance under 120 tons in various trades, - - -	14,655 do.
	39,000

In the New-Orleans and Louisville trade, the boats over two hundred tons make about one hundred and forty trips, in prosperous seasons; those of smaller size make from fifty to sixty trips. But to go into an estimate of the number of voyages made by the boats in the different trades is impossible, because no regular data are furnished, and the result depends upon a variety of contingencies.

Previous to the introduction of the steamboat in 1817, about twenty barges, averaging one hundred tons, afforded the only facilities for transporting merchandise from New-Orleans to Louisville and Cincinnati. These making but one trip within the year, gave the means of bringing up only two thousand tons. The present tonnage in this trade exclusively having been stated to be 8484 tons, gives the amount employed, amounting to one hundred and forty trips in the season, to be 1,187,760 tons: a cause capable of producing a revolution in sixteen years hardly equalled in the annals of history. The effects of these causes upon western commerce have necessarily been immense. The moral changes alone are felt throughout the west, and the effect on prices is almost incalculable: the imported article has fallen in a ratio equal to the increased price of western products. In looking back to the old means of transportation, we cannot conceive how the present demand and consumption could have been supplied by them.

To those who are acquainted with the early mercantile history of our country, when it was no uncommon thing for a party of merchants to be detained in Pittsburgh from six weeks to two months by low water and ice, the existing state of things is truly gratifying. The old price of carriage of goods from the Atlantic seaboard to Pittsburgh was long estimated at from five to eight dollars for one hundred pounds. We have instances, in the last five years, of merchandise being delivered at the wharf of Cincinnati, from Philadelphia, by the way of New-Orleans, for one dollar per hundred.

It may not be useless or uninteresting to give an idea of the *mortality* among steamboats in a given time. It is not pretended that any decided inference can be drawn from this statement, or that the facts go to establish any fixed rule. But under the present situation of steamboat discipline and regulations, a tolerably fair conclusion can be drawn from it. Taking the period, then, of two years, from the fall of 1831 till that of 1833, we have a list of boats gone out of service of sixty-six: of these, fifteen were abandoned as unfit for service, seven were lost by ice, fifteen were burned, twenty-four snagged, and five destroyed by being struck by other boats. Deducting the fifteen boats abandoned as unseaworthy, we have fifty-one lost by accidents peculiar to the trade. In number, this proportion is over twelve per cent. per annum; in tonnage, the loss is upwards of ten per cent. Amount snagged, 3721 tons; amount burned, 2330 tons.

The foregoing calculations and statements afford a great field for speculation. It is evident that there is a vast amount of surplus tonnage, and, of course, the business at present is entirely overdone. Indeed, from a full investigation of the subject, a few years since, by a committee appointed for the purpose, it was fully ascertained, that although the benefits conferred on the valley of the Mississippi were incalculable, the stock invested in boats was, as a general rule, a losing investment—in many cases, a total sacrifice. In a few cases, owing to a fortuitous combination of circumstances, money has been made; but the instances are so few as not to affect the rule. Time may correct this evil; but in a business in which public interest and public safety are so much concerned, a little governmental interference and assistance might be useful, and ought to be tendered. Some legislative action, which might tend to arrest the fearful increase of accident, has long been a desideratum; but how this is to be applied, presents the great difficulty. An experiment, however, has been tried, which seems to hold out the prospect of success. We allude to the company which was formed in 1832–3, called the Ohio and Mississippi Line of Transportation. During the existence of this company, not an accident of any kind occurred to person or property. A perfect regularity in arrivals and departures was introduced, and as all the good boats were in the same interest, there was no foolish rivalship, and consequently no injudicious racing. How far the post-office department would be justifiable in aiding such an association we do not pretend to say, but in our humble view of the case, we consider the great interests of the west are much involved in the question; and when the great uncertainty and irregularities of the mail, which have hitherto distinguished the routes between New-Orleans, Natchez, and St. Louis, and Pittsburg, Louisville, and Cincinnati, are considered, something is expected. On the score of economy alone, the subject is worthy of the reflection of the general government. Probably nine tenths of the correspondence on the western waters is of a commercial character;

the greatest portion of this is now transmitted, free of postage, by means of passengers: no one can prevent this. If a line of steamboats can be made interested in protecting the government, the general post-office would find it to its advantage to give liberal terms to such an establishment. N.

[Western Magazine.]

Manufacturing Establishments at Cincinnati, Ohio, in 1834.

There are more "manufacturing establishments" in this city than in any city or town in the west. Pittsburgh ranks next to us in that respect, and perhaps is ahead of us, when we take into consideration the difference of population. Cincinnati has a third more inhabitants than Pittsburgh. We have twelve or thirteen foundries and engine factories, for the manufacturing of engines for steamboats, flour mills, grist mills, rolling mills, and for blast furnaces, used in this section of country, and for sugar mills, corn mills, cotton gins, saw mills, and other uses, for the south, where an immense amount is exported yearly. An estimate was made in 1832, for the year previous, of the amount exported of articles of the above description, and it exceeded $400,000.

We have also a large and extensive rolling mill, owned and conducted by Messrs. Shreve, Paull, and M'Candless, gentlemen of great enterprise, who employ about one hundred men; they cut some ten to eleven tons of nails per week. An extensive and complete spade and shovel factory; seven or eight bell and brass foundries, where an almost unlimited amount of work is done; twelve steam saw mills, all of which are conducted on a very large scale—at most of them there are machines connected for cutting laths, shingles, &c.—5 to 7000 laths can be cut in an hour. At some of these mills they have a saw for cutting boards and timber, a circular saw, and a machine for planing flooring boards, all driven by steam power.

Two flour mills, one owned by C. Bradbury, Esq., and driven by water from the canal—they make sixty or seventy barrels every twenty-four hours. Connected with this establishment is an oil mill, for the manufacturing of linseed and castor oils; there is also a mill connected for grinding and sifting corn meal, large quantities of which are barrelled and exported. Our largest and most extensive flour mills in this section of the state are on the Big and Little Miami rivers, which empty into the Ohio above and below this city, and are situated from ten to fifty miles from Cincinnati; they manufacture, some one hundred, some one hundred and fifty, and some two hundred barrels, every twenty-four hours. All this flour is sent to this market by canal and waggons, and then exported to New-Orleans, the Atlantic cities, &c. The other flour mill in the city is worked by steam, and can manufacture, when in operation, one hundred and fifty barrels per twenty-four hours. I would stop here to remark, that there are about sixty steam engines in constant operation within the corporation lines, exclusive of those on our steamboats, and *all* high pressure; low pressure engines are not in good repute in the west.

A card manufactory, owned by M. P. Cassilly, Esq. where every description of machine cards are made. A large number of establishments for the manufacture of steam boilers, where hundreds of men are constantly employed. A stereotype foundry, and also a large and extensive type foundry, owned by N. Guilford, Esq. and others, where is manufactured every variety of type, printing presses, and every article connected with the printing business; there are eleven or twelve machines for casting type, and sixty to seventy hands are constantly employed; they manufacture to the amount of some 50 to $60,000 per year.

A steam fire engine factory, owned and conducted by Messrs. Chase and Seymour. The engines manufactured by them are equal for power, beauty, and workmanship, to any manufactured east of the mountains.

A patent lever lock factory. by Messrs. Shawk and Fitz.

A steel saw and file factory, by Messrs. Garrard & Co.

A printing press manufactory, on an extensive scale, by S. Dickinson.

A saddle tree manufactory, machinery driven by steam, conducted by Messrs. Kendall & Co.

A clock factory, by Lerman Watson, Esq. where are manufactured clocks, both of brass and wood. The establishment is a large one; many hands are employed, and many clocks made, of every description.

A factory for rolling sheet lead, and drawing lead pipes, by steam, for hydraulic purposes.

A steam stone saw mill. This establishment is worked on a new principle, and is patented to the proprietor, (Mr. Jas. Henderson.) It cuts stone with great accuracy.

A white lead manufactory, by steam power, owned by James M'Candless, Esq.

A bark and leather rolling mill, owned by the Messrs. Clarks, and worked by steam. The manufacture of malt liquors is carried on very extensively in the city, and to great perfection. There are eight very large breweries, and the beer, porter, and ale, manufactured by them, is equal to any I have ever seen in the eastern cities. We have a great number of snuff and tobacco manufactories, last factories, candle and soap factories, &c. Hats, furniture, &c. are manufactured in great quantities, and exported for sale to Kentucky, Tennessee, Mississippi, Louisiana, and every State south and west of us.

My limited information on the subject of manufactories, as well as want of time, will prevent me from giving you a more minute account of the manufacturing and mechanical business carried on to a very great extent, and to equally great perfection, in Cincinnati. I have named a few, and only a few, of the largest establishments, those that have come to my mind while writing; there are many others, where great numbers of hands are employed, that I do not at this moment think of. Opposite the city, at Newport, is a large cotton bagging factory. It is on a very extensive scale, owned by an incorporated company, with a capital of half a million. They manufacture bagging, bale rope, twine and cordage, Kentucky jeans, cotton and woollen coarse goods, sheet lead, and pipe—all of which is carried on by steam power. The machinery, when in full operation, will use annually 450 tons of hemp, 850 bales of cotton, 95 tons of wool, and 200 tons of lead. The agent resides and transacts all the business of this establishment in Cincinnati. There is also, in Newport, a steam saw mill.

In Covington, also opposite to this city, is a large cotton factory, owned by C. Macallister & Co. of this city; they run 2500 spindles, and manufacture 300,000 lbs. cotton yarn per annum. Sixty hands are employed. The yarn is sold here. There is also in Covington a rolling mill on a large scale, a rope walk, steam flour mill, and a steam saw mill.—[Patriot.]

Manufactories in Pittsburgh.—The various manufacturing establishments of Pittsburgh are thus briefly enumerated in a late number of the Gazette of that city.

There are, says that paper, in the city of Pittsburgh, 16 "foundries and engine factories" of the largest denomination, besides numerous other establishments of less magnitude.

There are 9 "rolling mills," cutting two tons of nails and rolling eight tons of iron per day, on the average, and employing from seventy to ninety hands each.

There are 6 "cotton factories", with an aggregate of twenty thousand spindles, one hundred and sixteen power looms, and oen hundred and seventy hands.

Six extensive "white lead factories."

Five extensive "breweries," besides small ones.

Six "steam saw mills."

Four "steam grist mills."

Ten extensive "glass works."

Upwards of one hundred "steam engines in full operation."

There are, moreover, innumerable establishments for the manufacture of ploughs, timber, wheels, screws of all kinds, saddle trees, machine cards, bells, brass work of every description, locks, &c. &c. all manufactured extensively for exportation.

Upon grafting the Walnut Tree.—Young or last year's wood is employed both as the scion and as the stock; and both scion and stock are allowed to unfold their buds, and grow for a week or ten days, before the operation of grafting is performed. Previously to doing this, the young shoots and foliage are rubbed off. Out of twenty-eight instances, twenty-two grew well, many producing shoots of nearly a yard long, and of very great strength. "The scions were attached to the young (annual) wood of stocks, which were between 5 ft. and 8 ft. high; and in all cases they were placed to stand astride the stocks, one division of the scion being in some instances introduced between the bark and the wood, and both divisions being, in others, fitted to the wood or bark in the ordinary way. Both modes of operating were equally successful. In each of these methods of grafting it is advantageous to pare away almost all the wood of both the divisions of the scions; and, therefore, the wide dimensions of the medulla in the young shoots of the walnut tree do not present any inconvenience to the grafter."—[T. A. Knight, Esq., F. R. S. Pres. H. S. &c.]

South American Cotton.—Some specimens of this cotton, from a tree twenty years old, and about fifteen feet high, have been forwarded to Washington, by R. B. M'Afee, at Bogota, with some of the seeds for distribution among the southern members of Congress. The tree bears two crops every year, one ripening in June and the second in December; each tree yielding from four to six pounds of cotton.

Improved Forcing Pump.

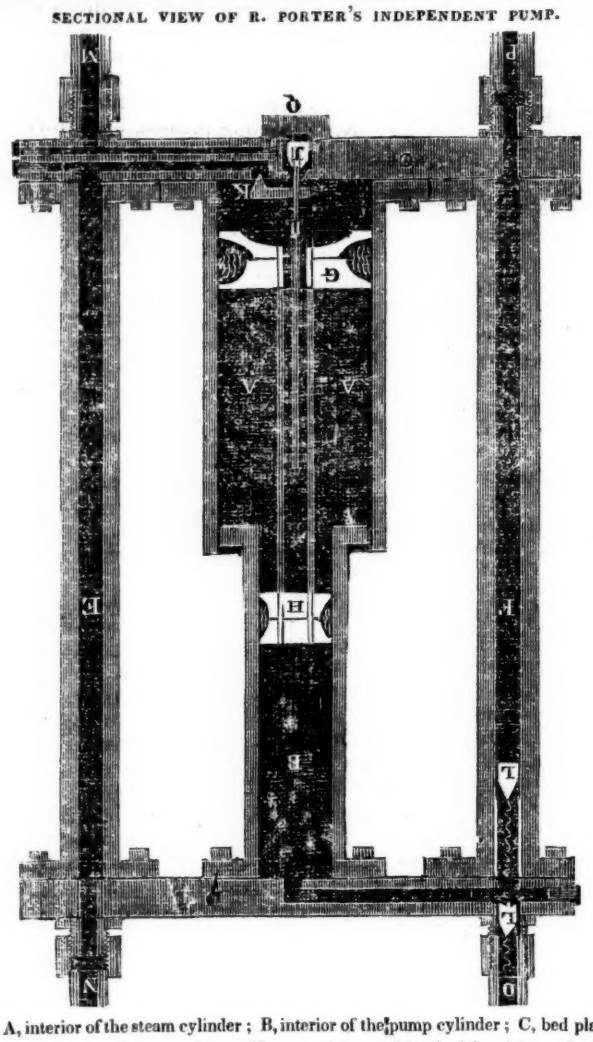
To the Editor of the Mechanics' Magazine:

Sir,—Permit me to inform the public, through the medium of the Mechanics' Magazine, that I have recently constructed, and have now in successful operation, an improved forcing pump, which will invariably keep the boiler of a steam engine supplied with water, to a given and uniform height, without ever permitting it to rise above; acting independently of the steam engine, being operated directly by steam from the boiler; and keeps the boiler as well supplied, while the engine is at rest, and even while blowing off steam, as at other times; and that without any attention from the engineer. I have made arrangements to have them manufactured to order, (warranted, of course,) by Mr. D. Copeland, Hartford, Conn.

Specification.—A hollow cylinder, four and a half inches in length, and two inches in diameter, having a flange at one end, is placed in a vertical position on the centre of a horizontal plate, which is six inches long, three inches wide, and half an inch thick, and to which the cylinder is secured by screws, passing through the flange into the plate. On the two ends of the plate are two vertical columns, each being eight inches in length, and three-fourths of an inch in diameter; and having a flange at each end, and an orifice three-eighths of an inch in diameter in the centre, are likewise secured to the plate by screws; and, in like manner, the heads of the columns are attached to another similar plate which rests on them. Another cylinder, four inches long, and one inch in diameter, is also attached by flange and screws to the centre of the under side of the cap plate, so that the bottom of this cylinder comes within, and, having a flange of the requisite size, closes the top of the cylinder first mentioned.

Within each cylinder is a piston with suitable packing, and the two pistons are connected by a hollow rod, five inches long, and half an inch in diameter; each piston occupying one inch of the end of the rod, thus leaving a space of three inches between the two. Within the piston rod is a valve rod, three and a half inches long, and one-eighth of an inch in diameter, having a flange head at the top: not so large, however, but that it will pass freely within the hollow of the piston rod. The other end passes downward, through an aperture in the centre of the bed plate, into a valve chamber, which consists of an orifice of half an inch diameter, extending upward from the bottom of the bed plate to within an eighth of an inch of its upper surface, and being closed at the bottom by a short screw, which also has a cavity in the end, the better to accommodate the valve. From one end, and near the bottom of the bed plate, an orifice an eighth of an inch in diameter is drilled horizontally to the valve chamber. Directly over, and parallel to this, is another orifice, which extends nearly to the valve chamber, where it meets with a vertical aperture from the upper side of the plate. These orifices are both closed at the outward end, but the first has a vertical communication with a small steam pipe, which is attached by an union joint to the bed plate, directly under the column, (which is called the steam column,) and the other has a communication upward, by another aperture, through the steam column, to another pipe, which is attached to the upper side of the cap plate.

SECTIONAL VIEW OF R. PORTER'S INDEPENDENT PUMP.



Explanation.—A A, interior of the steam cylinder; B, interior of the pump cylinder; C, bed plate; D, cap plate; E, steam column; F, water column; G, steam piston; H, pump piston, and head of the piston rod; I, valve rod, where it passes through the cross spring; J, induction valve; K, eduction or exhaust valve; L L, pump valves; M, steam pipe; N, exhaust pipe; O, suction pipe; P, injection pipe; Q, short screw, which closes the valve chamber.

Several small apertures, nearly in contact with that in the centre of the bed plate, complete the communication between the steam pipe and the steam cylinder; and these are closed occasionally by a circular or conical valve, three-eighths of an inch in diameter, which is attached to the bottom of the valve rod. Another conical valve is attached to an arm which projects from the valve rod an eighth of an inch above the upper surface of the plate; this valve occasionally closes the aperture which communicates with the steam columns; thus, the same motion of the valve rod, which closes one valve, opens the other. A thin elastic spring, two inches long, and half an inch wide, extends horizontally across the bottom of the steam piston, (which is a little concave,) being fastened to the piston by a screw at each end; and the valve rod passes through the centre of the spring. Thus, when steam is admitted, and drives the pistons upward, the spring receives the flange head of the valve rod, and, by raising it, instantly shuts off the steam; and, at the same time, raises the other valve, and thus allows the steam within the cylinder to escape by way of the steam column. From the upper side of the steam piston, two small rods, opposite and parallel to each other, extend upward through the bottom flange of the small cylinder, and through the cap plate; to the heads of these rods is attached a weight or spring, by which the pistons, when relieved from the action of the steam, are again forced down; and, by this motion, the horizontal spring comes in contact with the exhausting valve, shuts it down, thus opening the other, which again admits the steam to the cylinder.

Two other pipes, (water pipes,) are attached by union joints to the two plates, the one above and the other below the other column, which is called the water column, with which they communicate by apertures through the two plates. The cap plate is perforated horizontally from the aperture to the centre, thence downward, thus opening a communication between the water column and the small cylinder. Within the water column is a puppet valve, and above it, near the upper surface of the cap plate, is another; both of which are held to their seats by spiral springs, opening downward, so as to admit the descent, but prevent the ascent, of water through the column and pipes. (The whole apparatus may be inverted, however, which would preclude the necessity of spiral springs.) By this arrangement, when the pistons are moved down, the small cylinder is filled with water from the upper water pipe, which communicates with a reservoir; and when the pistons are moved upward, the water in the cylinder is forced down through the water column to the boiler. Thus, by the force of steam, emitted from the boiler by one pipe, water is injected by another.

Another advantage is derived from having the steam pipe descend to the proper water line in the boiler; that whenever the water, by the injection of the pump, rises above said line, the water is forced up in the steam pipe, and thus chokes the valves and retards the motion of the pump, while the water, thus escaping, is forced through the exhaust pipe, which also terminates in the reservoir.

I claim as original the construction and arrangement of the plates, cylinders, columns, and valves; and the application of steam direct to operate a pump, as connected with the regulating principle derived from the descent of the steam pipe to the water line as above described.

RUFUS PORTER.

The following patent for tanning leather may be of use to some and interesting to others of our subscribers. It is from the "Repertory of Patent Inventions" for August.

Specification of the Patent granted to JOHN PAUL NEUMANN, *of Cornhill, in the City of London, Merchant, for certain Improvements in making or producing Leather from Hides and other Skins.* Sealed December 21, 1833.

To all to whom these presents shall come, &c. &c. *Now know ye*, that in compliance with the said proviso, I, the said John Paul Neumann, do hereby declare that the nature of the said invention, and the manner in which the same is to be performed, are particularly described and ascertained in and by the following description thereof, (that is to say):

The novelty and utility of the new invention communicated to me by a certain foreigner, residing abroad, consists in employing the hop plant, whether root, stalks, or leaves, or any part thereof, either in a green or dry state; but I prefer the use of the plant in a dry state, and for the sake of economy, I give the preference to the stalks and the roots; but be it understood, although I prefer the hop plant, or any part thereof, to be used by itself for the purpose of tanning, yet they may be used in conjunction with any vegetable containing tanning matter. The mode to which I give the preference for this plant to be used for the purpose of tanning, is to grind or reduce it as fine as practicable, and, when so prepared, it may be employed for every mode of tanning in the same manner as oak bark, or any other vegetable containing tanning matter. According to circumstances of different hides or skins, this tanning matter may be applied either warm or cold, whether in extract or mixed with other matter; every practitioner in tanning will soon perceive which mode is most applicable for the different hides or skins which he means to subject to the process of tanning, as hides and skins require different modes of treatment; with some it is necessary to use heat or warmth, and others cold; but I prefer to have the hides or skins prepared in the usual mode hitherto followed by practical tanners.

The principal novelty of this invention consists in using the hop plant for tanning, which hitherto has never been employed for that purpose; and by means of this process it will be rendered both useful and valuable for the purpose of tanning.—In witness whereof, &c.

Enrolled June 20, 1833.

MILKING A HEIFER BEFORE CALVING.—Messrs. Editors: If the following, which you may rely upon as being strictly true, is worthy a place in your columns, it is at your service.

Rev. James Johnson, of this place, has a heifer which was two years old last April. A calf was expected from her the fore part of August. In May, her bag became large and tender, and seemed to be in danger of being injured by inflammation. To prevent this, they commenced milking her regularly, and though she had no other pasture than the highway, she gave from six to eight quarts a day till she calved, which was August 8th. Her calf was of a good size, and by no means poor. Her milk, before calving, was set by itself; and from the cream skimmed during the ten weeks she had been milked, were made forty pounds of excellent butter. She now bids fair to be a fine cow.—St. Johnsbury, Oct. 1834.—[Vermont Chronicle.]

WINTER FOOD FOR CATTLE.—A writer for the American Farmer gives the following under the head "Cheap Fodder." "Having been informed of the advantages of using the tops of Indian corn, cut as rye straw, to be mixed with potatoes or meal, as a food for horses or cattle, I have been making the experiment. I find that my cattle thrive better on the fodder than on rye straw, (cut and used in the same manner.) The corn stalk certainly contains a great quantity of farine substance, and must be highly nutritive. Being cut and scalded with a small quantity of bran, they afford an excellent mess for milch cows. In the common way of foddering cattle with tops, the blades are greedily eaten, but stalks are wasted. By adopting the plan recommended, the whole affords a nutritive food."

KEEPING HOGS WARM.—He that attempts to fatten his hogs in winter, unless their pen can be kept comfortably warm without extra expense of fuel, will be a loser. But if warm winter habitations with dry and cleanly lodgings can be afforded to the animals, they will fatten as well, and with as little food, in winter as in summer. This may be, in a good measure, effected by the construction and location of their pens. Their styes may be placed on the south side of an acclivity, and defended on the west, north and east by banks or walls of earth, against the cold winds of winter, with some contrivance like a swinging door, which will close of itself, to prevent the access of cold at the entrance. In that case they will thrive on but a part of the food which would be necessary in an exposed situation, to enable them to support a sorry existence in opposition to the incessant assaults of the pitiless elements. In front of their pens may be a well inclosed yard, which will answer as a receptacle for weeds, fallen leaves, brakes, &c. the raw materials of their swineships' manure manufactory. Swine, as well as cattle, intended for the shambles, well and warmly lodged in winter are half fed, but if not made comfortable in that respect are scarcely worth feeding; and attempting to fatten them is like laboring to fill sieves or broken cisterns with water. With store animals the case may be different. If growing stock, which it is wished to keep on hand a year or two or longer, are too warmly housed, they are liable to suffer in cases of accidental or inevitable exposure, much more than those which have never been accustomed to such indulgence.—[N. E. Farmer.]

TILES FOR STRAWBERRIES.—From the Transactions of the London Horticult'l Society, we take the following: "Flat tiles, painted black, are laid down round the plants, just as they are going out of flower. The tiles seem to be formed on purpose; for they are described as having at least half a circle cut out of each tile, in order that they may fit closely to the plants. 'The tiles during the day will not only prevent the exhalation of moisture from the soil, but also collect a great body of heat from the sun, and consequently form the fruit early, large, and well flavored.'"

LEAVES FOR POTATOES.—Leaves piled up in a pen, with alternate thin strata of swamp mud, when partially decomposed are found a superior preparation for the Irish potatoe crop. Put around the roots of fruit trees, this compost has been found to produce a healthy and vigorous growth. Its operation has been much increased in its efficacy, by the addition of lime to the mass. The finest Irish potatoes that I have seen produced in a southern climate were produced by the addition of this compost.

A GOOD EXAMPLE.—We were the other day quietly jogging along in our waggon through one of the upper counties of the State, when whom should we encounter but a person of high standing in one of the learned professions, and formerly a member of Congress, very industriously employed in driving a large four ox team heavily loaded with leached ashes. This was a pleasant sight to our optics, inasmuch as it was not only an exceedingly pleasant change from the severer duties of his profession, but was also a profitable and rational employment; and above all, it was setting a noble example to the younger members of the community, if they would but follow it. Such examples go far, very far, in doing away the silly stupid notion, that there is nothing but manual drudgery in farming, and that it is a low and vulgar calling. We noticed the farm of this person, and could not but be highly pleased with the changes which he has effected, and which are still going on. Not many years ago this land was a worthless common, bearing nothing but moss, hardhacks, and lambkill. It is now well fenced and well tilled. Twenty-five acres are now turned over by the plough, and the owner busily engaged in adding materials to enrich and improve. How much better would it be if more of our professional men would thus fill up their leisure hours and reap the satisfaction and reward which such healthy and sinless employment affords. Let a man thus labor to subdue and cultivate some of the millions of waste acres that now spread themselves over and deform our State, we as a community would soon cease to "go to New-York to mill," and the individual himself would at once become in reality and in very deed a public benefactor. With such an one, patriotism will be a word of immense meaning and not a senseless phrase—a mere flourish of rhetoric. He will feel, as he looks round upon his reclaimed and renovated acres, that he has done at least one good deed, and that he has a country, a home, a resting place of his own, and his life and his life's blood will be freely devoted for its prosperity and defence.—[Maine Farmer.]

COFFEE IMPORTED INTO THE UNITED STATES.—We learn by an official paragraph in the Globe, that the amount of coffee imported into the United States for the three first quarters of 1833, was 99,955,020 lbs., valued at 10,567,299 dollars; and that for the three first quarters of 1834, there were imported 60,344,701 lbs., valued at 6,473,469 dollars. During the corresponding period last year, there were exported 24,897,144 lbs. valued at $3,041,689—this year 32,715,599 lbs. valued at $3,969,906.

[From the Mechanics' Magazine.]

Supplemental Report of the Seventh Annual Fair of the American Institute.

The managers, anxious to do exact justice to the exhibitors, and to correct any errors that may have occurred in the confusion incident to a public exhibition, where more than five thousand articles were presented, have deemed it proper to make a supplemental report. They have been induced to do this, partly in consequence of certain facts having been brought to their knowledge since the exhibition, which, if known, would have varied their award. The extent of the fabrication of certain other articles of great utility, and of general consumption, demand a more pointed public notice than was given in the original report. They are satisfied of this, also, partly from information obtained since the exhibition, as well as from a careful review of the reports of the judges.

The case of incorruptible artificial teeth will first be noticed.

When the judges on these articles first met and reported, specimens from only two exhibitors had arrived. Afterwards, S. W. Stockton brought other specimens, and challenged competition. The successful competitor in the first instance consented to enter the list of competition again, and thereby waived the advantage he had acquired by the decision of the judges at their first meeting. At their second examination, the decision was unanimous in favor of Stockton's specimens. But the fact of this mutual agreement, and the waiving on the part of the party interested in the first decision of the judges, not having been positively ascertained, no notice was taken by the managers of either decision in the awarding of premiums. But the judges having subsequently certified that the last examination was with the consent and approbation of the successful competitor in the first instance, the managers have deemed it due to Mr. Stockton that he should be noticed; they therefore award to S. W. Stockton, of Philadelphia, a silver medal, for the best specimen of highly perfected incorruptible artificial teeth. And inasmuch as J. Plantou & Sons, of Philadelphia, exhibited the second best specimens, at both examinations, the managers award to them a diploma.

The managers have carefully examined into the extent and importance of the manufacture of watch dials, by Mullen & Ackerman, No. 101 Warren street, city of New-York. The accuracy and elegance of the workmanship, the facility with which they can be multiplied, the great demand they are competent to supply, and the saving effected for the consumers, entitle them, in the opinion of the managers, to a gold medal in lieu of the silver medal heretofore announced, as the "reward of skill and ingenuity for the manufacture of gold watch dials."

And the managers also award to Mullen & Ackerman, a diploma, for handsome specimens of filagree jewelry.

Mr. T. Fossard's specimen of blue dye, the committee deem important. A cheap substitute for indigo would be of incalculable value; and the examinations the specimen underwent have made a favorable impression on the minds of the managers. They therefore did not hesitate to award him a diploma.

Matthias Ludlum, a journeyman mechanic, produced a beautiful brass tea-kettle and heater, which were made, by the consent of his employer, expressly for the Fair. They were exhibited in the name of D. E. Delavan, who, for these and other articles taken by him to the Fair, received a silver medal. Mr. Ludlum has since applied, and claimed the premium. It is desirable that the rewards of the Institute should, as far as possible, reach the ingenious producer, where he is brought to a knowledge of the Institute. The managers, therefore, in accordance with the desire to reward obscure merit, award to Matthias Ludlum a silver medal, for a beautiful brass tea-kettle and heater.

Choice specimens of turned tool handles were exhibited by N. Cowenhoven. Mr. C.'s manufactured tools are sold extensively in this city; he is entirely self-taught, and deserves a public notice for his ingenuity. The managers award to him a silver medal.

The managers also award to Alfred Willard, of Boston, a diploma for shell worked combs, elegantly carved.

To Francis Smith, for brass shovel and tongs, made by him, and delivered by Mr. Delavan at the Fair, the managers award a diploma.

They also award to Geo. Bird a diploma for imitation mouldings.

Miss Sarah Seager, 233 Thompson street, is entitled to praise for a handsome flower-piece, painted in oil. The managers award her a diploma.

Specimens of cut and pressed glass from the Union Glass Company, Philadelphia, were worthy of commendation.

Post's hame-collar block has met with much commendation.

Robert Fazon's improved cooking stove has also been highly approved; sold at No. 13 Bowery. A diploma is awarded him.

James Van Dyke, Brooklyn, Long Island, exhibited samples of excellent mustard made by him. It is hoped, as an American article, it will find favor with American consumers.

Messrs. E. & T. Fairbanks exhibited their patent portable scales, which are a convenient and excellent article—for which a diploma was awarded. A specimen model may be seen at the office of the Institute, No. 41 Cortlandt street.

T. W. Clisby, No. 12 Tenth street, exhibited an ingenious architectural engraving of the Ionic capital of the temple of Ilyssus, as described by the inventor. The illustrations profess to show the centres of the spiral scrawls of the volute, and to prove that they accord with mathematical principles. The engraving may be seen at No. 41 Courtlandt street.

A specimen of Asiatic marble, of the Breccia species, imported in its rough state, hewed and polished in this city—a beautiful article. Exhibited by Warren Gould. A diploma.

The managers have already granted to Obadiah Parker a gold medal for his artificial stone, and for the purpose of enabling him to make more public his discovery, they have, at his request, also awarded him a diploma.

To Charles Edwin Ely is also awarded a diploma for a finished specimen of ornamental writing engraving.

The managers award to Kutz & Adams, No. 330 Broadway, manufacturers of rules, mathematical instruments, &c., a silver medal, for two drafting scales, and two engineer sliding rules: specimens exhibiting great skill, accuracy, and elegance. An accompanying explanatory book shows the application of the different rules to multiplication, division, rule of three, tables of the areas and circumferences of circles, mensuration of superficies and solids, weighing of metals, &c.: a happy illustration of mental labor saving. They may be seen at the Library of the Institute, 41 Cortlandt street.

The managers, in accordance with the wishes of the Denny Manufacturing Company, and deeming the progress of the manufacture of the kind of articles exhibited by them of national importance, award to the said Company for their specimens of superfine black and blue broadcloths, in lieu of a gold medal, a silver pitcher.

The fanlight of T. Thomas—vitrified glass, displaying the American arms surrounded by the stars of the 13 States within a tri-colored border—deserves particular commendation for elegance of execution. The long lost but beautiful art of staining glass is revived and executed in New-York with a degree of perfection not surpassed perhaps by any of those relics of former times that have reached us. Mr. Thomas's specimen may be examined at No. 41 Cortlandt street.

FOOD.—By the experiments of Dr. Beaumont, it has been satisfactorily proved that from whatever is introduced into the stomach, the same article is invariably elaborated, whether animal or vegetable, tough or tender, it matters not; the result is the same, under all circumstances, when the digestive process is properly carried on. In the vicinity of Hudson's Bay, one of the exploring party, in those inhospitable regions, says he visited a cabin, one evening, when the inmates were at supper, which consisted of raw flesh of seals, fat, birds and entrails, which constituted a delicious meal. A young girl, the belle of the tribe, was sitting by, biting the inside of a seal to pieces, and distributing the bits to her companions. Train oil, particularly when rancid, is a delicious article, being both meat and drink for Greenlanders. Yet, it is worthy of remembrance, the chyme, the nutritious fluid which nourishes the body, is always the same, whether elaborated from putrid aliments or the most savory viands.—[Scientific Tracts.]

EVER BEARING RASPBERRY. — This fruit is very little known to horticulturists out of the State, and we suspect even those within our borders know scarce more. The only plants in this neighborhood are in the garden of Nicholas Longworth, Esq., to whom we are indebted for the following description of the plant:

"In the latter part of October, 1822, I met, in a garden in Warren county, (among the Shakers,) with raspberry plants in full bearing, and, on inquiry, learned they were a native fruit of the State, found near Lake Erie.

"The fruit resembles the common native black raspberry,* but is larger and finer. I introduced a few roots into my garden, and find them constant bearers from June until destroyed by frost. The fruit is produced in large clusters; the wood continuing to grow through the season, and the ends of the new shoots

* Known in some parts of the country as the thimbleberry. The resemblance is in the shape and color, the consistency is between that of the Antwerp and thimbleberry; nearly that of the strawberry.

throwing out fresh blossoms. It is more decidedly a constant bearer than any kind of fruit I have seen. Our monthly strawberries are abundant bearers in June, but for the balance of the season their produce is so small as to be scarcely worth the trouble of gathering. This raspberry is a constant and abundant bearer, except for two months in the summer, when, if the weather be very hot and dry, the produce is less."—[Cin. Chron.]

We take the following interesting extracts from an able article in the October number of the Edinburgh Quarterly Review. Farmers will be well repaid for a careful perusal, and mechanics and manufacturers will not be less rewarded in deeply considering the subject. Indeed, the article contains an important lesson for every member of the community, showing conclusively that what is useful for the public, is almost universally so for individuals, and that one public improvement generally increases the advantages and conveniences of others.

1. *Minutes of Evidence before a Select Committee of the House of Commons on the London and Birmingham Railway Bill.* London: 1833.
2. *On the Importance and Advantages of Railways.* London: 1833.
3. *Seven Annual Reports of the President and Directors to the Stockholders of the Baltimore and Ohio Railroad Company.* Baltimore: 1833.
4. *The American Railroad Journal.* New-York: 1832, 1834.

It is now two years since we called the attention of our readers to the great advancement which had been made in the art of applying steam-power to the important purposes of inland transport. We then foretold the rapid extension of this great instrument of social improvement; and subsequent events have amply verified our predictions. Railroad undertakings have been entered into with an avidity to satisfy the most ardent, and to create alarm in the more timid and cautious. In our own country, however, the number of checks on such schemes are sufficient to prevent the public from rushing into them with undue precipitation; and the danger rather is, that private and local interests may act as too great a drag on public enterprise, than that the latter principle should receive undue scope. A considerable portion of the property of the country, and more especially of that in land, has, in many instances, opposed serious obstructions to parties seeking legislative sanction for projected lines of railroad; and although, in some cases, such opposition has proceeded from sinister motives, or such as would not bear an open avowal, yet we must suppose that, in the majority, the ostensible objections have been seriously and sincerely, though erroneously, entertained. In the present article, we shall endeavor to show, not only that the principal objections so urged are unfounded in themselves, but that they are in direct opposition to the results of experience, and as much opposed to the real interests of the objectors as to the public good. We shall also briefly advert to the principal lines of communication recently undertaken, and to those which are in progress in other parts of Europe, and in America.

The opposition which railway companies experience in obtaining the necessary legislative sanction, proceeds, in the majority of cases, in this country, from the landholders, through whose lands the projected lines are to pass. Nevertheless, it is demonstrable that there exists no class of persons whose interests are more likely to be promoted by such improvements than those of the local proprietors. One ground of objection assumed by proprietors resident in the vicinity of projected lines of railroad, is the apprehended nuisance of the noise and smoke of the engines, and of the exposure of their premises to the intrusion of large numbers of passengers. The evidence produced before the Committee of the House of Commons, on the London and Birmingham railroad, will show how unfounded are such objections.

Mr. Hardman Earle, a Liverpool merchant, was one of the most determined opponents of the Liverpool and Manchester railroad. His family had, at the cost of above £12,000, built a house, and laid out pleasure-grounds, through which the line of railway passes; and their opposition was founded partly on the appre-tended injury and inconvenience arising from this circumstance. Mr. Earle, therefore, was very properly summoned as a witness before this Committee, and the following is a part of his testimony.

"Have you experienced any inconvenience since the railway was constructed?—No inconvenience whatever has been experienced.

"Are the grounds infested by the people in consequence of the passage of the locomotive engine?—No.

"Is there any thing offensive in it?—Nothing whatever.

"Is there any smoke?—None whatever.

"Is there any noise?—No; it is rather an object of interest to persons residing there.

"Are you able to say whether the inhabitants of other houses are annoyed?—I am enabled to say they do not consider them a nuisance.

"At the commencement of the undertaking were you a determined opponent to the measure?—Yes; my mother was a petitioner against the bill, and I appeared as evidence against it.

"From all that you have since seen, you would no longer oppose the construction of railroads?—Certainly not; from what I have seen my opinion is entirely changed."

In fact the fuel burned is coke, which produces no smoke. The smoothness of the road, and its freedom from those asperities which exist on the best constructed turnpike roads, are such that the wheels move with comparatively little noise. But, in addition to this, the speed being almost three times that of common coaches, and more than seven times that of waggons, the noise is almost momentary. A train of waggons or coaches shoots past with the speed of the wind, and the noise is scarcely perceived before it ceases; it cannot be heard on a still day at a greater distance than one hundred yards.

Another ground of objection, urged by landlords, is the apprehended depreciation of the value of the adjacent land. The facility of communication with the metropolis and populous towns is so obvious an advantage, that we cannot help expressing our astonishment that such an apprehension should for a moment be entertained. As those who could entertain an objection so unfounded are little likely to be accessible to the reasoning by which it might be refuted, we shall here confine ourselves to facts, and show that in every case, without a single exception, which has come under inquiry, the value of land adjacent to a successful line of railway has been considerably increased.

Mr. Pease, M. P., a director of the Stockton and Darlington railway, stated, in his evidence, that he had been for ten years a director of that company, during seven years of which the railroad had been in practical operation that he had closely observed its effects on landed property through which it passed, or which was adjacent to it, and that he had been privy to all the negociations which had taken place between the railroad company and the proprietors from whom they had made purchases.

"Do you know whether the advertisements for letting farms or selling estates contain any thing relating the railroad?—It is invariably stated, either that the railroad passes through the estate or near to it; they consider it as an enhanement of the value of the property.

'Are you a landholder yourself in the neighborhood of the railroad?—I have one small estate, which it intersects into two equal parts nearly. It passes through the enclosure in which the homestead stands.

"Have you been benefitted by the railroad passing through it?—I have; the cuttings are available as drains; the rent of the property is increased one-fifth. I let the farm subject to its being given up on the railroad being made, and I have since received one-fifth additional rent.

"Do you know any instance of the reduction of rent, in consequence of a railroad passing through a farm?—I have made inquiries, but have not been able to meet with such an instance."

The Stockton and Darlington railway was originally intended to be a single line; but after its formation the company found, from the extent of traffic upon it, that a double line would be necessary. Having originally purchased no more land than was necessary for the single line, they were obliged to treat with the same proprietors for an additional tract to widen the road, so as to receive the second line of railway. Nothing can more conclusively decide the question of the effect of the railway on the value of land than this circumstance. Here was a portion of land, purchased before any railway had been constructed; and an equal quantity, in precisely the same place, was subsequently purchased from the same parties by the same company, after the formation of the single line of railway. Mr. Pease was examined as to the terms on which the second portion of land was purchased.

"Have you paid on those (second) treaties an increased value upon the land beyond what you paid before the line was established?—Invariably.

"Can you say to what amount?—I should say that we have never objected to pay an advanced price of 50 per cent.

"Was this in consequence of the increase of value arising from the railroad?—We were quite aware of the increased value to the owner, and made no objection to the advance."

Mr. Thomas Lee, a surveyor and agent to several landed gentlemen in the neighborhood of the Liverpool and Manchester railroad, was examined as to the effect of the railroad upon the value of land in that neighborhood.

"Can you tell the committee whether, in an agricultural point of view, property has been improved or deteriorated by the railroad passing through it?—It has been improved.

"Have the farmers been benefitted by it?—They have.

"Have Colonel Lee and Mr. Trafford obtained higher rents in consequence of it?—They have.

"Have you taken land yourself at an increased rent.—At double the original rent."

Mr. Hardman Earle, before mentioned, was examined to the same point.

"Do you know any instance in which the value of land has been affected by the railway?—I think the Chat Moss was an instance of that kind. They bring manure from Manchester to Chat Moss; and wherever a station is formed, the value of the land is improved. You see advertisements recommending a site, because the railroad runs near or through it.

"Do you know of any instances by which land has been depreciated by it?—I think I can say positively that there is not an instance on the Manchester line.

"Do you know of any persons quitting their dwelling-houses in consequence of it?—I do

not know of one. I should be glad to purchase land on the line, to build for myself."

We may here state that the Chat Moss is an extensive district of bog and morass, over which the railroad was carried at incredible labor and expense. It was of course previously altogether unproductive. We now, however, see on each side of the road extensive systems of drains, gradually carrying off the water, and leaving tracts of considerable fertility. There is no doubt that within a very short period the whole of this morass will be transformed into a fertile tract of arable land.

Another ground of objection is the injury likely to be produced to turnpike trusts. Even if the truth of this objection be admitted, it is not one of sufficient force to warrant the sacrifice of public benefit. A turnpike trust is, or ought to be, held only for the public good; and if it should eb affected by the establishment of a railroad, this would only prove that the one was found more beneficial than the other. But it is a curious fact, that this apprehended injury has not (at least in every instance) ensued. The Stockton and Darlington railway furnishes a remarkable example to the contrary.

Mr. Pease states in his evidence that the turnpike roads in the neighborhood of that railway have been improved since its construction.

"Has there been any advantage derived to the roads in the neighborhood?--I consider that they are all of them in a much better state of repair, and that their funds are improved: I do not know a single exception.

"Do you know the road from Stockton to Barnard Castle?—Perfectly well; I have been a commissioner. In that trust there are two roads running nearly parallel with the railroad, and a third intersected by it.

"Were the trustees of these roads petitioners against the bill?—All of them.

"On what grounds did they oppose it?—That the money borrowed on mortgage was hazarded by the railroad.

"Have their fears been realized?—No; the funds in all cases are improved.

"You state that of your own knowledge?—Yes, as an acting commissioner."

The advantages likely to arise to agricultural producers from the facilities of conveying their produce to market, as well as the reciprocal advantages derived by the consumers, were rendered apparent by the evidence of several farmers and graziers, and also of metropolitan butchers.

Mr. W. Meade Warner, an extensive farmer residing in Oxfordshire, stated that he considered that if the railroad now proposed to be carried from London to Birmingham had been formed ten or fifteen years ago, it would have produced him an advantage of not less than fifty pounds a-year. He considered that the whole system of farming grass land would undergo a change, owing to the new capabilities which would be conferred upon it, by the speed, certainty, and cheapness of the communication with the market. A different kind of produce, of a much better and more profitable quality, would be obtained from it.

"Are lambs sent to London from your neighborhood?—They are, principally on the road; but when too young to leave the mother for so many days as the road requires, they are sent by waggons. Not many, however, are sent by this way.

"Are you prevented from sending many lambs to market by the difficulties of the road?—We cannot send them so young as we would otherwise send them. It is of importance to send them early in the season, as the ewe would feed off earlier.

"If a railroad were established, would they be sent by you and the other farmers by that means?—No doubt of it.

"Do the same observations apply to calves as to lambs?—Exactly.

"Are the cattle much injured by being driven up?—Very much; incalculably."

It is not merely views of policy that should lead us to seek for some improvement in the transport of cattle to the markets. The following evidence is addressed to the feelings of common humanity.

"Supposing that even the cost was increased of sending them by the railroad, would it be of advantage to the farmer to have them conveyed by that means, nevertheless, instead of driving them in the ordinary way?—Certainly; it would be a great advantage. Sometimes the poor things are driven till their feet are sore; and the effect of that is, that they are sold on the road for what they can get. It is often the case, that they drive many of them till they have not a foot to stand on.

"What price, in your opinion, would the farmer be willing to pay for the conveyance of his cattle to London by the railroad, instead of the present present way?--If I paid double, I should still be a very great gainer. It is a very important thing in the saving of beasts and sheep, both as to the exposure and the nuisance they create on the public roads. Besides that, the cruelty and injury to the animals is beyond all belief.

"Do I understand you rightly, that you would prefer to pay fourteen shillings for transmitting your cattle by railroad, to paying seven shillings for the ordinary means of conveyance?—To be sure I should."

Mr. Charles Whitworth, a very extensive farmer in Northamptonshire, was examined on the same points. He had seen cattle conveyed on the Manchester railroad, and stated that they came from the journey "as fresh as if they were just out the field.' He stated, that in order to send the lambs to market, it was necessary to send the ewes a part of the way with them; and 'even then they were much injured before they reached London.'"

The injury sustained by cattle coming to the London market was further proved by Mr. John Sharp, an extensive butcher, residing in Mary-le-bone. He stated that he has been for forty years established as a butcher, and that he never failed to observe more or less injury sustained by cattle driven from a distance to London; that their value was considerably lessened, owing to the inferior quality of the meat, arising from the animal being slaughtered in a diseased state; that the animal, being fatigued and over-driven, "becomes feverish, and his looks become not so good, and he loses weight by the length of the journey and the fatigue." He stated further, that even steam vessels, where they could be resorted to, did not altogether remove this objection. Cattle come from Scotland by steam-vessels, and they are found in London to be in an unnatural state: "they seem stupified, and in a state of suffering from fatigue."

It is not merely the fatigue of travelling which injures the animal, but also the absence from its accustomed pasture. Mr. Sharp stated that the injury from this cause was more or less under different circumstances, but always considerable. In order to obviate this, a considerable portion of the meat supplied to the London market is slaughtered in the country, and it comes in this state, in winter, from distances round London to the extent of one hundred miles. In warm weather a large quantity of it is spoiled, and a still greater quantity is deteriorated by this mode of conveyance. The transport of calves and lambs, from a distance greater than thirty miles, is altogether impracticable; and even from that distance is attended with difficulty and injury. To convey these and other live cattle from a great distance, not only speed, but evenness of motion, is indispensable. Now these two requisites cannot be combined by any other means than the application of steam-engines upon a railroad.

From the whole of the evidence, the fact appears to be indisputably established, that the supply of animal food to the metropolis is not only defective in quantity, but that it is of unwholesome quality,--comparatively, at least, with what it might be, if the tract from which it could be supplied were rendered more extensive. But forcibly as the evidence bears on this species of agricultural produce, it is still stronger respecting the produce of the dairy and the garden. Milk, cream, and fresh butter, vegetables of every denomination, and certain descriptions of fruit, are supplied exclusively from a narrow annulus of soil, which circumscribes the skirts of the metropolis. Every artificial expedient is resorted to, in order to extort from this limited portion of land the necessary supplies for a million and a half of people. The milk is of a quality so artificial, that we know not whether, in strict propriety of language, the name milk can be at all applied to it: the animals that yield it are fed not upon wholesome and natural pasturage, but in a great degree on grain and other articles. It will not be supposed that the milk which they yield is identical in wholesome and nutritious qualities with the article which would be supplied, if a tract of land of sufficient extent for the pasturage of cattle was made subservient to the wants of the metropolis. Add to this, that inferior as must be, under such circumstances, the quality of the milk, there exists the strongest temptations to the seller who retails it, to adulterate it still further, before it finds its way to the table of the consumer.

Mr. Warner, already mentioned, stated that, great as the advantage of a railroad would be to graziers who supplied the London butchers, it would be of still greater advantage to dairy farmers.

"Have you ever had offers made to you to supply any part of London with milk?—I have; but have never been able to comply with them on account of the want of a conveyance.

"If there was a railroad, by which you could transmit milk, and thus avail yourself of such an offer, would it add materially to the profits of your farm?—There is no question that it would increase the profit at least 400 or 500 per cent. I have no doubt of it, on milk and butter."*

In the produce of the dairy and the garden, it is not merely by smoothness and ease of transport that a railroad would offer facilities. Articles of a perishable nature must be supplied to the consumer within a short period after they are taken from the soil. The speed of railroad conveyance being six or seven times that by cart or wagon, the consequence would be, that such articles would be supplied to the metropolis from a circuit with a radius six or seven times the length of that which now supplies them; and consequently the land which would become available for the metropolitan markets, would be from thirty-six to forty-nine times the present extent; supposing railroads to diverge in all directions from the metropolis, and to be furnished with their usual ramifications.

In our former article on this subject, we attempted to show, by general reasoning, the immense benefits which would accrue, both to farmers and landlords, as well as to the inhabitants of towns, by carrying extensive lines of railroad through populous districts, connecting them with those places from which supplies of food and other necessaries might be obtained. We showed that the factitious value which tracts of land immediately surrounding the metropolis and large towns acquire from the proximity of the markets, would be moderated, and a portion of their advantages transferred to the more remote districts; thus equalizing the value of agricultural property, and rendering it in a great measure independent of local circumstances. We showed, further, that the profit of the farmer, and the rent of the landlord, would be benefitted by the reduced cost of transport, and that such benefit would be likewise shared by the consumer; in fact, that the

*This enormous estimate of the advantage is no doubt founded on the supposition that dairy produce would maintain its present price: an obvious error, but still the advantage would be very considerable.

advantages of centralization would be realized without incurring the inconvenience of crowding together masses of people within small spaces; and that the whole face of the country would be brought to the condition, and made to share the opportunities of improvement which are afforded by a metropolis, and by towns of the larger class. At that time, however, we had no specific evidence to adduce in support of our reasonings, so as to reach those minds which can be only influenced by a direct appeal to facts. The subsequent extension of railways has brought to light a body of evidence, so extensive, that our only difficulty lies in the selection of such parts of it as may not exceed our necessary limits.

The beneficial effects of the Liverpool and Manchester railway on the value of land in the district through which it passes, have forced conviction upon the minds of those who were the most conspicuous opponents to that project.

Mr. J. Moss, a director of the Manchester railway, gave the following testimony:

"Is it contemplated to have a railroad between Birmingham and Liverpool?—It is quite arranged.

"Have you made application to the owners of land for their consent?—As far as our half goes.

"Have you found owners, on the line between Liverpool and Birmingham, to consent to the railroad there, who, nevertheless, opposed the Liverpool and Manchester line?—Several; among others, Lords Derby and Sefton.

"Did Mr. Heywood of Manchester oppose the Manchester railroad?—Yes.

"Did he afterwards complain of its not passing through his lands?—He complained very much of it."

If the ill effects of the opposition, on the part of landed proprietors, to projected railroads, were limited to the injury which they inflict upon themselves, the public would have less reason to complain of it; but unfortunately, other extensive injuries have been thus produced. The opposition by Lords Derby and Sefton to the Manchester railway bill, compelled the company to deviate from the line of road which they first proposed, and which Mr. Stephenson, their engineer, pronounced to be the best. That line must have passed through a part of the property of these noblemen, whose opposition would at that time have defeated the bill. The company were therefore compelled to select another line, which was not only much more expensive in the formation, but which has been since productive of consequences most injurious to the road, and to the interests of the company and the public.

The line which the engineer was compelled to adopt, imposed upon him the formidable enterprise of crossing Chat Moss; and involved the company in an enormous expense in forming a solid road over that extensive morass This, however, was not the only or the most extensively injurious effect: it became necessary to carry the line of road over an elevation, so that the moving power had to overcome a slope rising at the rate of one in ninety-six in both directions,—extending through more than a mile and a half in each case. We explained in our former article the injury which such an ascent produces: to draw a load up a slope of this degree of acclivity requires an impelling power, amounting to nearly four times the power necessary to draw the same load upon a level; the consequence is, that either auxiliary engines must be kept constantly at the foot of the slope, or else the impelling engine must be constructed with four times the power necessary on the level, and with a proportionate increase of strength and weight. We may safely assert, that no circumstance connected with the Manchester railway has been a more fertile source of expense and inconvenience than this occurrence. But if any thing be wanting to demonstrate the mischief of the proceeding out of which this has arisen, it is the fact detailed in the evidence of Mr. Moss, that a second line of railway has been in contemplation, connecting Liverpool with Manchester; that this second line is countenanced and encouraged by these very noblemen, Lords Derby and Sefton; that it is to pass through their grounds, and, we presume, to take the very course which was originally contemplated by the present railway company, and from which they were driven by opposition.

"Has there not been a scheme for another railroad?—Yes.

"Is it to pass through Lords Derby and Sefton's land?—Yes; they both consented. They threw us back the first year by the opposition to our road, and we then lost such a line as we never could obtain again. Since this, they have both consented that the other line shall pass through their property."

Other proprietors, however, more speedily learned their error, and actually made interest to get the line through their property.

"Do you know Bold Hall?—Very well; it is a fine house.

"Is it near Liverpool and Manchester?—Yes; the proprietor complained very much that we made a complete bend, to avoid his property.

"Did he afterwards wish you to cut off the bend, and go nearer by a straight line?—Yes; and we agreed to go much nearer to his house."

Besides the permanent advantages to land by opening large markets for every species of vegetable, animal, and mineral production, railways are attended with a variety of subordinate benefits, which, though they may appear inconsiderable, when compared with those already mentioned, yet ought not to be wholly disregarded. Among these may be mentioned the extensive employment of the local population in a work in which by far the greater proportion of the labor is of a rude kind; likewise, the purchase of materials of various kinds from the adjacent land-owners. It was proved that on the Stockton and Darlington railway, as well as on other similar works, large sums were paid to the land-owners for gravel, timber and stone, for materials for bricks, and for various other purposes, independently of the land purchased from them. It was also proved that a very large proportion of the poor rates of the parishes through which railways pass are paid by the railway company. The Manchester railway company, for example, contribute not less than £4000 per annum to the poor rates of their parishes.

Mr. Pease stated that more than half the entire rates of several of the parishes through which the Stockton and Darlington railway passes are paid by the railway company. But, in addition to this, the actual amount of rates is lessened by the extensive employment afforded for labor on the railway. Mr. Lee stated, that of the poor rates in the parish of Newton, one-fourth part was paid by the Manchester railway company.

The speed of transit, and the consequent frequency of communication between places of great commercial intercourse, are matters the importance of which can scarcely be overrated in this country. The time between Liverpool and Manchester, being a distance of about thirty-one miles, is now about an hour and a half; there are three deliveries of letters by post daily between these two places, so that two letters may be written and one answer received by the same correspondents in the course of a day. The frequency of communication might be still greater: nine trains of coaches start daily from each place, and, if it were necessary, there might be nine deliveries in each town. When the lines of railway from London to Birmingham, and from Birmingham to Manchester, shall have been completed, the time from London to Liverpool will be about eleven hours; the mail which leaves London at eight o'clock in the evening will therefore be delivered in Liverpool before nine the following morning. The time between London and Birmingham will be five hours and a half; there will probably, therefore, be two mails daily. The letters despatched from London at eight o'clock in the evening would be delivered in Dublin the following evening. From some improvements which are in progress in the steam-packets, it appears that, under average circumstances, they may be depended on to make the voyage from Liverpool to Kingston (near Dublin) in ten hours; the mail which would arrive at Liverpool at seven in the morning would therefore be at Dublin at six in the evening, so that the Dublin merchants could answer their London letters the same night. It would, therefore, be possible that an answer to a letter from London to Dublin could arrive in London in about fifty hours after the despatch of the letter.

In the evidence of Mr. Moss we find a striking instance of the preference given by the public to railroad conveyance.

"Do you know whether there are some places on the line from Liverpool to Manchester where persons go down a considerable distance to come to the rail?—Yes; Southport is an example. This town is 38 miles from Manchester, and 25 from Liverpool. Persons going to Manchester prefer to come the 25 miles to Liverpool, and 30 along the railroad, making 55 miles, to going 38 miles by the direct road to Manchester.

"Do they do that with a saving of time and expense?—They save both time and expense.

"Being aware of these facts, and knowing the projected line between London and Liverpool, are there many places from which persons would come to the railroad, for the purpose of going to London, rather than take the direct turnpike-road?—Yes; all places in the manufacturing part of Yorkshire, such as Bradford, Halifax, and Leeds; they would come to Manchester, and there take the railroad.

"What would be the saving from Leeds?—It would be 40 miles round; but it would save four hours in time, and £1 in money.

"What would be the saving from Rochdale? Ten hours in time, and 30s. in money."

A large portion of the time of those farmers and graziers, living at a distance from London, who are obliged to attend the London markets, is consumed in making the journey. Mr. Robert Attenborough, a farmer and grazier residing at Braybrook, eighty miles from London, stated that his business obliged him to attend once a week at Smithfield market; that it takes him three days and a night, travelling at night, to go up to London, do his business, and return; that he seldom gets home till four o'clock on Sunday morning; and that a like inconvenience is sustained by the other farmers and graziers in his neighborhood: that besides the expenses on the way, the fare of the coach is £3 4s., and that the sacrifice of his business at home is the consequence of his journeys to London. A railroad would take him to London in about four hours, and starting in the morning he could arrive at home at a reasonable hour the same night.

By the evidence of other witnesses it appeared that a saving to a very large amount has been made by houses of business in Manchester, since the establishment of the railway, in their agencies alone. Some notion of the extent of this may be formed, when we state that several houses have saved £500 a year in this item of expenditure.

The advantage of the increased speed and cheapness of communication obtained by railways, worked by steam-engines, is not confined to the saving of the time and money of those who are compelled by business, or induced by pleasure, to travel. Vast numbers, who, under other circumstances, would remain stationary, find it for their advantage to avail themselves of the opportunities of intercourse with distant places thus opened to them. It appears by the evidence of Mr. Booth, that before the establishment of the railway between Manchester and Liverpool, there were about twenty-two regular coaches running be-

tween these places; these coaches were licensed to carry about 700 persons; and taking them at their average number, they may be estimated as having transported 450 persons daily between these two towns. The inside fare was ten shillings, the outside six; and the time of the journey varied from four hours to four hours and a half. The fare at present, on the railroad, by the first class train, is five shillings and sixpence, and by the second class three shillings and sixpence—being about half the fare by the coaches; and the time of the first class an hour and a half, and of the second class two hours—being less than half the time occupied on the turnpike road. The number of passengers between the two places in the six months ending in December, 1833, was 215,071 booked; to which, if we add 5000 for the passengers taken up on the road and not booked, we shall have a total of about 220,000: if we divide this by the number of days in the half-year, we shall find that the average, daily, including Sundays, was 1,209. It appears, therefore, that the number of passengers between these towns has been tripled since the establishment of the railroad; in other words, about 800 persons daily, who have occasion to pass between the two places, but who were before prevented from doing so, either by reason of the time or expense of the turnpike road, are now enabled to perform the journey.

Among the railroads now in progress, those by which it is proposed to connect the metropolis with Birmingham, Manchester, and Liverpool, are in every point of view the most interesting and important. This line has been undertaken by two distinct companies, under the sanction of different acts of Parliament. That part which connects London with Birmingham has been undertaken by a joint-stock company, under the title of the "London and Birmingham Railway Company:" the continuation of the line is carried from Birmingham to Warrington, where it unites with a branch of the Liverpool and Manchester railway, which runs from Warrington to Newton, a point of the main line just midway between Liverpool and Manchester. This line from Birmingham to Warrington is incorporated under the title of the 'Grand Junction Railway Company.' The acts of incorporation, like others of the same kind, have been opposed in Parliament by many landed proprietors. The act for the Birmingham and London Company was, in the first instance, thrown out of the House of Lords through the influence of a single peer, because he apprehended some annoyance to a mansion of his, in the neighborhood of which the railway must have passed: although it appeared that this mansion was one which he was not in the habit of occupying. The noble proprietor and his friends on the committee did not attend to hear the evidence: they came, however, to the division, and threw out the bill. How the Company was able to remove this opposition in the subsequent session of Parliament we do not know; but removed it was, and the bill passed.

The ill effects of the slopes on the Manchester and Liverpool railway have impressed on engineers the indispensable necessity of avoiding them, or rendering them as gentle as possible in future undertakings. This object will be attained in a great degree on the Birmingham and London line, but at an enormous expense. The country through which it will pass is of an undulating character, so that there is scarcely a mile of the road in which either cuttings or embankments will not be necessary. Where the elevations to be encountered are inconsiderable, a level is obtained by forming a chasm in the crest of the hill, and using the stuff removed from it to form an embankment in the valley; but there are numerous elevations along the proposed line of road, which either from their great height or other causes render this method impracticable. In such cases the level of the road will be maintained by penetrating the elevations by tunnels. Of these structures eleven were proposed in the Parliamentary plan; but it is probable that cuttings will be substituted for some of them as the work proceeds, and that the actual number will not exceed eight: the largest will be constructed at Kilsby, near Daventry, seventy-seven miles from London; it will be about a mile and a half in length. Another, situate about two miles beyond Watford, will be a mile in length. That which will pass under Primrose Hill, and under the roads leading from the Regent's Park, and from St. John's Wood to Finchley, will be half a mile in length: one near Weedon will be three-quarters of a mile long, but none of the others will exceed a quarter of a mile in length.

The principal obstacle to the adoption of tunnels on railways, worked by steam power, has been the want of sufficient ventilation. The furnace of the engine soon renders the air unfit for breathing, and the impurity produced by the passage of one engine might continue until the arrival of the next. It is proposed, in the longer tunnels, to overcome this difficulty by providing shafts or chimneys at short intervals, carried from the roof of the tunnel to the surface of the ground above. In the case of the long tunnel at Kilsby, some of these shafts will be one hundred feet high; in the other tunnels they will vary from thirty to seventy feet; all of them will be eight feet in diameter. We are not aware whether the sufficiency of such an expedient for the purposes of ventilation has yet been ascertained by experiment. It has been stated that the speed with which the engines will traverse the tunnels will be so great, that very little ventilation will suffice. But the ventilation necessary for the tunnel will be the same, at whatever speed the engine may proceed; for the air drawn through the fire during the passage of the engine will be the same whatever the speed may be. Each stroke of the piston will draw through the fire the same quantity of atmospheric air; and it is obvious that the same number of strokes of the piston will produce the same number of revolutions of the wheels, and therefore the same progressive advance of the engine at whatever rate the piston may move. If the engine moves rapidly through the tunnel, it will, therefore, still vitiate the same quantity of atmospheric air; but there will be this convenience, that the passengers will not be detained in the air so vitiated any considerable length of time. The longest tunnel upon the projected line will be traversed in less than five minutes, and the shafts will subsequently remove, though perhaps not very speedily, the impure air.

In cases where it is not found practicable to traverse the valleys by embankments, bridges to support the railroad, of great extent, have been projected, by which the valleys may be arched over. One of the most stupendous of these works is the viaduct intended to bestride the valley of the Ouse. This work, which will be situate between Newport Pagnel and Stony Stratford, will cross the valley of the Ouse about a mile and a half eastward of the latter town; its extreme length will be a mile and a quarter, and the height of the level of the rails at the centre arch above that of the water will be nearly fifty feet; the centre portion will be supported on seven magnificent arches, each of fifty feet water-way; the keystone of each arch not to be less than twenty-five feet above the surface of the ground. The extreme ends of the viaduct will be formed by embankments. By such gigantic efforts of labor and skill, the inequalities of the ground will be greatly diminished, though not absolutely overcome.

Between the extremities of the line at London and Birmingham, there will remain five ridges of different elevations, separating six valleys varying in depth; so that the line undulates throughout nearly its whole extent. The entire length will be 111¼ miles: of this there will only be nine and a quarter miles absolutely level. Proceeding from the Depot near Primrose Hill there is a gentle descent of eight feet in two miles to the valley of the Brent; there is then a gradual ascent amounting to 128 feet in eleven miles, by which the line is conducted to the crest of the first ridge at Olney; the road then descends eleven perpendicular feet, and crosses the valley of the Colne; it next encounters the second ridge, which it ascends for fifteen miles at the average rate of about fourteen feet in a mile. From the summit of this ridge, situate at Tring, thirty miles from the Depot, it will descend for twenty-three miles, falling 160 feet; here it will be conducted by the great viaduct over the valley of the Ouse, and again ascend a ridge at Blisworth, between Northampton and Towcester: from the viaduct to the summit of this ridge the road ascends 100 perpendicular feet in 6 miles, being at the rate of about sixteen feet in a mile; it then again falls forty feet in five miles, and crosses the valley of the Ahen near Weedon, sixty-four miles from the Depot. It next crosses a ridge which intersects the line between Daventry and Northampton at Kilsby: this ridge is ascended by a slope twelve miles in length, and rising seventy-six feet. From Kilsby summit the road descends into the valley of the Avon by a slope of fourteen miles, descending 132 perpendicular feet; the line here, after crossing the Avon, passes through Coventry, and ascends the last ridge at Berkswell summit, by a slope of seven miles and a half, rising 115 perpendicular feet: from this summit it again descends into the valley of the Blyth, by a slope of three miles and a half, falling fifty-seven perpendicular feet; from which it ascends by another slope of ten miles, rising forty-eight feet, to the station at Birmingham.

On the whole line there are twenty-five miles and a half, proceeding from London to Birmingham, in which there is an ascending slope at the average rate of fifteen feet in a mile; and there are eighteen miles and a half in which there is a descending slope of the same inclination. The extreme gentleness of these slopes is such, that, in descending, the train may be safely permitted to move by gravity, so that during the descent the whole of the moving power may be saved. The power saved on the descending slopes may, therefore, be considered as nearly proportional to the additional power required in the ascending ones; and as no part of the road will require a greater addition to the power requisite on the level than two-thirds, the locomotive engines at present used, imperfect though they be, will be fully equal to the exigencies of the line. The expenditure of power from London to Birmingham will be greater than in returning; because the station at Birmingham is about 350 perpendicular feet above the station at London.

The width of this magnificent road on the embankments will be twenty-eight feet; the rails of each line will be five feet asunder, and the line will be separated by a space of six feet; an additional space of six feet will be left on each side between the outer rails and the edge of the embankment. Where the road is cut through, elevations an additional foot in width will be allowed to each side for drains: the deepest chasms by which the road penetrates the elevations will not exceed fifty-five feet,—the greater number, of course, being considerably less; and the highest embankments by which valleys are crossed will not exceed 45 perpendicular feet. The width of the road in the tunnels will be six feet less than on the embankments; there being only a space of three feet left between the outer rails on each side, and the walls of the tunnel. The sides of the embankment will slope downwards by a more gentle inclination than that used on the embankments of the Manchester railway, being at the rate of two horizontal feet to one foot perpendicular.

Supposing—what, consistently with the results of the whole history of human invention, is in the last degree improbable—that the locomotive engines, though now only in their infancy, shall not receive any farther improvements, the *time* of a first class train from London to Birmingham would be only five hours and a half. The gentleness of the slopes will

render their motion almost as uniform and punctual as that of the hands of a time-piece; so that the passage of the successive trains from hour to hour through the different parts of the country will almost serve the purposes of a clock.

It appears from documents obtained from the public offices, that the present number of passengers between Liverpool and London annually amounts to about half a million. If we may apply to this railroad results proportionate to those with which we are furnished by that of Manchester, we should expect that the number of passengers between the two towns would be increased in a threefold proportion. But there are obvious reasons which lead us to expect a much larger increase of intercourse, in proportion to the population of the two towns, than in the case of Manchester and Liverpool. Between these two places, the railroad passes through not a single town, or even village; the intercourse is, therefore, in a great degree confined to the population of Manchester and Liverpool themselves. Now, a large portion of the intercourse on the Birmingham and London railway will be supplied from the populous towns which skirt its course on either side. These tributary streams may be expected to swell the main current to at least double its magnitude. The distances of the principal places adjacent to the line, *in time*, from London, supposing branch railways to be formed, would be as follows:

	Hours.	Minutes.
Aylesbury,	2	30
Bedford,	3	30
Birmingham,	5	30
Dudley,	6	—
Kettering	4	15
Kidderminster,	6	30
Leamington,	5	—
Northampton,	3	—
Rugby,	4	—

The Grand Junction railroad, from Birmingham to Warrington, will be a work presenting less difficulties, and attended with a more limited investment of capital. The country through which it passes is less intersected by ridges and other inequalities; although here also a considerable extent of cuttings and embankments must necessarily be made. As a commercial speculation, it is needless to say that it presents the fairest prospects of a successful issue: indeed, the formation of the Birmingham and London line rendered the Grand Junction line inevitable. Thus, the whole kingdom from London, in a north-westerly direction to Liverpool, will be traversed by this great artery of communication; producing an interchange of benefits, physical, and moral, commercial, social, and political, the importance and amount of which it would be impossible to estimate or predict.

The formation of this great line of cheap and rapid communication has rendered the construction of similar means of intercourse in other directions inevitable; otherwise the benefits of the metropolitan market would be almost exclusively conferred upon those agricultural and manufacturing producers whose good fortune might place them in its neighborhood. In their own defence, therefore, landed proprietors and capitalists in every part of the country must exert themselves; for whatever doubts they may have formerly entertained as to the expediency of constructing such means of communication with the metropolis, they can hardly any longer hesitate as to what they should now do; unless they desire to see themselves cut off from the benefits arising from the production of articles which cannot be transported on turnpike roads or canals in competition with railroads. We find, accordingly, that various undertakings have already been set on foot for the construction of extensive lines of communication, in other directions from the metropolis. An act of Parliament was passed, during the last session, for the construction of a line connecting London with Southampton and Portsmouth, passing through Esher, Basingstoke, and Winchester. As this project was countenanced by the principal landed proprietors through whose property it will pass, the act passed the legislature without difficulty or expense.

The projectors of another line were not, however, so fortunate. It was proposed to cross the kingdom by a railroad in a direction due west from the metropolis, extending to Bristol, and passing through Maidenhead, Reading, and Bath, and in the immediate vicinity of Windsor, Oxford, Gloucester, Cheltenham, and Devizes. The company who applied for this act experienced, during the last session, the most vexatious and determined opposition on the part of some of the landed proprietors; and, after having been driven to an expenditure of above £30,000, in the production of evidence, and in other parliamentary charges, the bill, though it passed the Commons, was thrown out in the Committee of the Lords, through the influence, it has been said, of a single Peer! The Company will find means to remove the opposition, and the bill will probly pass in the next session. This railway would facilitate the communication of the metropolis with Wilts, Somerset, Gloucester, Wells, Bridgewater, Taunton, Exeter, Plymouth, Devonport, Falmouth, and many other places. It would also, in conjunction with steam navigation, connect the metropolis with the ports of the Bristol channel, with South Wales, and with the south-western coast of Ireland.

The Southampton line will open an easy communication with the coast of Hampshire, and by the Southampton steam-packets, with the Isle of Wight, and the Channel Islands; also with the ports of St. Malo, Havre, and Cherbourg. If the railway contemplated between Havre and Paris should be constructed, a communication would be thus opened between London and Paris, which would reduce the time of transit between those capitals to about twenty-four hours, allowing twelve hours for the voyage by steam from Southampton to Havre.

To form an estimate of the effects which these vast undertakings are likely to produce on the intercourse of the country, it will be necessary to consider the travelling which at present exists on these lines, and to compare it with the effects produced on the intercourse between Manchester and Liverpool. It appears from evidence given before parliamentary committees, that the annual number of passengers between London and Birmingham amounts to 488,342. By the stamp-office returns, it appears that the income produced from coaches passing along the proposed route of the Southampton railroad, at the present charge for travelling, amounts to four hundred and forty-six thousand one hundred and ninety-three pounds annually. Now, if we assume that the average cost of travelling the whole distance to Southampton is one pound, it will follow that the travelling along that line is equivalent to 446,193 travellers annually, the whole distance. It appears also, from similar returns, that the number of travellers along the proposed line of the Great Western Railway at present may be estimated at 302,118. Thus, along these three lines, the present intercourse would stand as follows:

Birmingham,	488,342
Bristol,	302,118
Southampton,	446,193
Total,	1,236,653

Now, we have already stated that the number of passengers between Manchester and Liverpool, before the establishment of the railroad, was at the rate of 450 daily; and that it was during the half year ending 31st of December, 1833, at the rate of 1210 daily; being an increase in the ratio of eight to three, very nearly. Supposing, then, that the three railroads now contemplated produce a like increase of intercourse, we shall obtain the probable number of passengers upon them by increasing the above estimate in the ratio of eight to three; the results would be as follow:

Birmingham,	1,302,244
Bristol,	805,642
Southampton,	1,189,848
Total,	3,297,734

Thus, the number of persons who would pass annually to and from the metropolis, along these three lines of road, would be nearly equal to a fourth of the whole population of Great Britain.

Our limits compel us to omit the notice of numerous important railways which are in contemplation, and some of which are in a state of very forward preparation; among these, there is one entitled to more especial notice, being not much less in extent than the Liverpool and Manchester railway, and passing through a district of great commercial importance. The line we allude to will be carried from the town of Preston in a southern direction through Wigan, to the Manchester railway; on which it will enter at a point equally distant between Manchester and Liverpool; thus connecting the whole district, for a distance of twenty-two miles from Preston to Newton, with Manchester and Liverpool. The act for this railway has passed the legislature, and it is now constructing under the direction of Mr. Charles Vignoles, civil engineer.

A line of railroad is already in an advanced state, by which it is proposed to connect Leeds and Selby, and thus open a more easy and rapid communication between that important mart and the port of Hull. Another line is in preparation, by which to cross the neck of the island, and to connect the Irish Channel with the German Ocean, extending from Carlisle to Newcastle.

Of the shorter railroads in progress may be mentioned that proposed to be carried from London Bridge to Greenwich. This work ought perhaps more probably to be called a *viaduct*, since it will be sustained by masonry, supported by a series of arches, for nearly the whole distance: its length will be three miles and three quarters, and the *time* will be twelve minutes.

The only railroad yet undertaken in Ireland is that which connects Dublin with King's Town, a distance of about seven miles. This road, which is now completed, has been executed under the superintendence of Mr. Vignoles. King's Town and its neighborhood is the most populous district around Dublin; and besides being the most favorite watering-place, is at present the place of residence of the families of most of the wealthier mercantile and professional classes. By a recent arrangement, the post-office steam-packets from Liverpool and Holyhead land at King's Town harbor, instead of Howth. These circumstances, combined with other local advantages, present a fair probability of the success of this railway.

Notwithstanding the unquestionable commercial advantages which have resulted to the joint-stock company which established the Manchester railroad, it is certain that these advantages are considerably less than they would have been had there been sufficient previous experience in the working of railroads, under the circumstances of so vast an amount of rapid transport as the company have found it necessary to undertake. Much still remains to be learned, not only with respect to the construction of the locomotive power, but likewise respecting the construction of the railroad itself. The cost of the locomotive power has been so great, that the directors lately thought it advisable to appoint a sub-committee of their own body, assisted by Mr. Booth, their treasurer, to inquire and report respecting the causes of the amount of this item of their expenditure, and to ascertain whether any and what measures could be devised for the attainment of greater economy. A very able and satisfactory report was made by this committee, or, to speak more correctly, by Mr. Booth, who was the only individual con-

nected with it who really had a competent knowledge of the subject of inquiry.

It appears that previous to the establishment of the railway, Messrs. Walker and Rastrick, engineers, were employed by the Company to visit various places where steam power was applied on railways; for the purpose of forming an estimate of the probable expense of working the railway by locomotive and by fixed power. These engineers recommended the adoption of locomotive power, and their estimate was, that the transport might be effected at the rate of .278 of a penny, or very little more than a farthing per ton per mile. In the year 1833, five years after this investigation took place, it was found that the actual cost was .625 of a penny, or something more than a half-penny per ton per mile; being considerably above double the estimated rate. Mr. Booth very properly directed his inquiries to ascertain the cause of this discrepancy, by comparing the various circumstances assumed by Messrs. Walker and Rastrick in making their estimate, with those under which the transport was actually effected. The first point of difference which he observed was the *speed* of transport: the estimate was founded on an assumed speed of ten miles an hour, and it was stated that a four-fold speed would require an addition of 50 per cent. to the power, without taking into account wear and tear. Now, the actual speed of transport being double the speed assumed in the statement, Mr. Booth holds it to be necessary to add 25 per cent. on that score.

The next point of difference is in the amount of the loads: the statement is founded upon the assumption, that every engine shall start with its full complement of load, and that with this it shall go the whole distance. The facts, however, are, says Mr. Booth, that instead of a *full load* of profitable carriage *from* Manchester, about half the waggons *come back empty;* and instead of the tonnage being conveyed the whole way, many thousand tons are conveyed only half the way: also, instead of the daily work being uniform, it is extremely fluctuating. It is further remarked, that in order to accomplish the transport of goods from the branches, and from intermediate places, engines are despatched several times a-day, from both ends of the line, to *clear the road;* the object of this arrangement being rather to lay the foundation of a beneficial intercourse in future, than with a view to any immediate profit. Mr. Booth makes a rough estimate of the disadvantages arising from these circumstances, by stating them at 33 per cent. in addition to the original estimate.

The next point of difference is the fuel. In the orginal estimate, *coal* is assumed as the fuel, and is taken at the price of five shillings and tenpence per ton: now the Act of Parliament forbids the use of coal, which would produce smoke; the company have, therefore, been obliged to use *coke*, at seventeen shillings and sixpence a ton. Taking coke, then, to be equivalent to coal, ton for ton, this would add .162 to the original estimate.

These several discrepancies being allowed for, and a proportional amount being added to the original estimate, the amount would be raised to .601 of the penny per ton per mile, which is within one-fortieth of a penny of the actual cost. This difference is considered to be sufficiently accounted for by the wear and tear produced by the rapid motion; more especially when it is considered that many of the engines were constructed before the engineer was aware of the great speed that would be required.

When we formerly called the attention of our readers to this subject, we stated that the proceedings on this railway ought to be regarded as merely experimental; that the engines must be consequently varied in weight and proportion; that each quarter would produce new ones of increased power and efficiency; and that, consequently, the expenses thus incurred for a given amount of traffic ought not to be regarded as the permanent and regular expenses of the road, but rather as the price paid for that knowledge which could be obtained by no other means than by experiments on the same vast scale. We find that subsequent events have fully confirmed our opinions.

"What then," says Mr. Booth, in the Report already alluded to, "is the result of these opposite and mutually counteracting circumstances? and what is the present position of the Company in respect of their moving power? Simply, that they are still in a course of experiment, to ascertain practically the best construction, and the most durable materials, for engines required to transport greater weights, and at greater velocities, than had till very recently been considered possible; and which, a few years ago, it had not entered into the imagination of the most daring and sanguine inventor to conceive; and farther, that these experiments have necessarily been made, not with the calm deliberation and quiet pace which a salutary caution recommends, making good each step in the progress of discovery before advancing another stage, but amidst the bustle and responsibilities of, and large and increasing, traffic; the directors being altogether ignorant of the time each engine would last, before it would be laid up as inefficient, but compelled to have engines, whether good or bad; being aware of various defects and imperfections, which it was impossible at the time to remedy, yet obliged to keep the machines in motion, under all the disadvantages of heavy repairs, constantly going on during the night, in order that the requisite number of engines might be ready for the morning's work. Neither is this great experiment yet complete; it is still going forward. But the most prominent difficulties have been in a great measure surmounted, and your committee conceive that they are warranted in expecting that the expenditure in this department will, ere long, be materially reduced, more especially when they consider the relative performances of the engines at the *present time* compared with what it was two years ago."

We must now conclude these observations on the Manchester railroad, without noticing what appears to us of scarcely less importance than the subject to which the Committee have directed their inquiries,—we mean the state of the road itself. No one who has recently travelled on it can be ignorant to what a great extent the rocking and swinging of the carriages from side to side is increased. We are quite aware of the impossibility, under the circumstances, to obviate entirely an effect of this kind; but it now amounts to a degree which is not only inconvenient to travellers, but which cannot fail to be highly detrimental both to the carriages and to the road. This effect will doubtless be traced to the inequalities which have been produced in the joinings of the rails. On examining the rails in various parts of the road, we found a very small proportion of them in which the joinings had maintained that degree of exactness which is indispensable to safety and stability, when great speed is attempted. In most cases, the surface of one rail at the joint is more or less depressed below the surface of the other, and in some cases this depression amounts to a serious fraction of an inch. The consequence is, that the passage of the wheels over the rails can be distinctly felt in the carriages, and wherever two inequalities do not occur together at corresponding joints, and in the same direction, the carriage receives a lurch more or less violent according to the amount of the inequality. The effect of the collision of the wheels on the rails at the joints is, in many cases, rendered quite perceptible. We have ourselves taken from the road pieces of iron of considerable magnitude, detached from the rails at those joints by the succession of blows which they receive as the wheels pass over them. The remedy for these defects must be sought in giving greater stability to the sleepers and chairs which sustain the rails. It would be also extremely desirable to keep an exact register of the breakages of rails in different parts of the road,—specifying in every case the part of the rail where the fracture takes place. By this means we should be enabled to trace, with some degree of certainty, the causes of this course of wear. For example, it is at present doubtful on what part of the road fractures most frequently take place; it is said to be on the descending planes; but we apprehend that this statement depends more on conjecture than on ascertained facts. It would be also useful to ascertain whether the fractures take place more frequently *over* the chairs or *between* them; also, whether they happen oftener at the extremities of the rails, or in some intermediate part. The surface of the fractures should also, in every case, be carefully examined, to determine whether any accidental flaw has existed in the structure of the metal. Such a body of facts as it is in the power of the Directors to collect, at no cost to the Company, but by giving the necessary directions to their subordinate agents, would form an invaluable storehouse of knowledge for the guidance of their future operations, and those of other railroad companies.

We believe that one source of extraordinary expense, to which the Company have been subjected, may be traced to the adoption of *fish-bellied* instead of parallel rails, and to the insufficient weight of metal in them. The theory of the fish-bellied rail is doubtless seductive; and if the sleepers and blocks were absolutely immovable, they would, with a given weight of metal, have the advantage over the parallel rail—but in a rail of this form, on the slightest subsidence of the sleeper, or shifting of the chair, the rail being deserted by its support, its weakest point is immediately exposed to the incumbent weight of the waggons under the most disadvantageous mechanical conditions. In a word, the very circumstances which constitute the advantage of the fish-bellied rail are here reversed, and produce a proportionate liability to fracture. Independently of this, the weight of the rails (35 lbs. per yard) was quite insufficient; and we believe that where fractures take place, the Company have deemed it advisable to replace them by rails at 50 lbs. to the yard.

The Leeds and Selby Railroad Company have profited by this experience, and have rejected the fish-bellied rail; laying down a durable road of parallel rails at 50 lbs. per yard.

The advantages of railroads have of late years become so apparent, that their construction has been undertaken to a certain extent on the Continent. In France, a double line of railroad has been constructed, extending from St. Etienne to Lyons, a distance of thirty-four miles. This road is not adapted for very heavy transport, the rails weighing only 26 lbs. per yard. To obtain a sufficient level, fourteen tunnels were constructed; one of these is a mile in length; another, more than half a mile, is carried under the river Gier. The road is carried by a viaduct over the Soane. In the cost of this road we have a notable example of the commercial wisdom of our neighbors, who paid for the iron used on it four times the price at which they could have obtained it from us? A part of this road is a self-acting plane, on which the loads are moved by their own weight; on the other parts of it locomotive engines have been used.

A continuation of this road has been constructed from St Etienne to Roanne, extending about fifty-five miles. It consists of a single track; the first thirteen miles being formed of cast iron rails of 43 lbs. to the yard, and the last forty-two miles of rolled iron, 26 lbs. to the yard.

Among the enterprises of this kind undertaken in Germany, the railroad from Budweis to Lintz merits notice. The extent of the line is about eighty English miles; it was commenced under the direction of Gerstner in 1825, and is composed of wooden beams, bearing flat rails of iron, six yards in length, two inches in width, and one-third of an inch in thickness. It is intended for the purposes of general commerce, but more especially for the transport of salt.